

THE ERIGONINE SPIDERS OF NORTH AMERICA.
PART 7. MISCELLANEOUS GENERA
(ARANEAE, LINYPHIIDAE)

A. F. Millidge

Little Farthing, Upper Westhill Road,
Lyme Regis, Dorset DT7 3ER, England

ABSTRACT

A revision of the North American erigonine genera *Diplocentria*, *Phanetta*, *Sciastes*, *Souessoula*, *Tachygyna* and *Tunagyna* is reported. Five new genera are erected: *Annapolis* (type species *Sciastes mossi* Muma), *Masikia* (type species *M. atra*, new species), *Subbekasha* (type species *S. flabellifera*, new species), *Vermontia* (type species *Imetiscus thoracicus* Emerton) and *Wabasso* (type species *Eulaira questio* Chamberlin). All the genera studied are defined chiefly on the basis of the genitalia. New species described are: *Masikia atra*, *M. caliginosa*, *Sciastes ensifer*, *S. hastatus*, *Subbekasha flabellifera*, *Tachygyna alia*, *T. cognata*, *T. coosi*, *T. exilis*, *T. proba*, *T. sonoma*, *T. speciosa*, *Tunagyna antricola*, and *Wabasso cacuminatus*. The following synonyms are proposed: *Diplocentria replicata* Holm = *Wabasso questio* (Chamberlin); *Sciastes fuscus* Chamberlin and Ivie = *Souessoula parva* (Banks); *Tachygyna alaskensis* Chamberlin and Ivie = *T. ursina* (Bishop and Crosby); *Tachygyna paita* Chamberlin = *T. haydeni* Chamberlin and Ivie; and *Tachygyna sima* Chamberlin = *T. ursina* (Bishop and Crosby). Descriptions, diagnoses and distribution maps are given for each species in the genera described.

INTRODUCTION

Amongst the North American erigonine genera there are several in which the female epigynum is in the form of a scape, shaped roughly like an inverted triangle. These scapes, which may be long or short, carry the genital openings on the dorsal surface. A number of these genera are dealt with in this paper, namely *Tachygyna* Chamberlin and Ivie, *Tunagyna* Chamberlin and Ivie, *Phanetta* Keyserling, *Souessoula* Bishop and Crosby, *Subbekasha* new genus, *Annapolis* new genus, *Wabasso* new genus and *Masikia* new genus. Although the epigyna in these genera are all basically similar, the male palpal organs exhibit wide differences in structure.

Also dealt with in this paper are the genera *Diplocentria* Hull, *Sciastes* Banks and Crosby and *Vermontia* new genus. Some *Diplocentria* females possess a short scape, though this is less obvious than in the genera listed in the previous paragraph. The scape of the type species of *Diplocentria* is nevertheless superficially similar to those of *Wabasso*, *Masikia*, *Annapolis* and *Souessoula*, and indeed species of *Wabasso* and *Masikia* have been mistaken for *Diplocentria* species. The genus *Sciastes* has in the past been filled with a very heterogeneous mixture of species; apart from the type species, not one of these is now retained in the genus. *Vermontia* has been erected for a single species which has the

epigynum similar to that of *Sciastes*, but in which the male palpal organ shows some similarity to that of *Diplocentria*.

The genus *Eulaira* Chamberlin and Ivie has previously been regarded as erigonine (Chamberlin and Ivie 1945; Roewer 1942; Bonnet 1956). The *Eulaira* species have epigyna which show superficial resemblances to those of *Diplocentria* and *Tachygyna*; the relatively simple palpal organs and the tibial spinal formula (2221) might also be regarded as evidence for the erigonine nature of the genus. Examination of the tracheae, however, shows that these are of the linyphiine form (Blest 1976), and consequently *Eulaira* should now be excluded from the erigonines, in my opinion.

SYSTEMATICS

Tachygyna Chamberlin and Ivie

Tachygyna Chamberlin and Ivie 1939:61; Roewer 1942:729; Bonnet 1959:4231. Type species *Tachygyna vancouverana* Chamberlin and Ivie, by original designation.

Definition.—This genus, which comprises spiders with a total length of 1.25-1.8 mm, is a very homogeneous one. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively short and stout, with tibia I 1/d (female) 4-5.5. The tibial spines are 2221 in both sexes. Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV; TmI is 0.30-0.50. The palpal tibiae have 2 trichobothria dorsally in both sexes. The male palpal tibia carries very short apophyses, and the dorsal margin may be serrated (e.g. Fig. 32). The cymbium of the male palp is raised conically in some of the species (e.g. Fig. 1); the paracymbium is fairly large and stout. The suprategular apophysis, viewed ectally, is tusk-like (Fig. 1). A membranous ribbon arises from the stalk, and curves around the anterior end of the ED (Figs. 1, 3). The ED (Figs. 7, 8, 9) has a stout radical section with a broad pointed tailpiece, the dorsal rounded part of which is lightly sclerotized and difficult to see; anteriorly the ED carries a stout sclerotized arm which runs ventrad. The embolus (Figs. 2, 7) is a short spur arising from the dorsal margin of the ED. The radical section is more or less identical in all the species, but the terminal part of the anterior sclerotized arm is different for each.

The epigynum is a scape, shaped roughly like an inverted triangle; the genital openings lie near the tip of the scape, on the dorsal side (Figs. 65, 66, 67). There is a cavity or hollow between the basal part of the scape, on the dorsal side, and the small dorsal plate (Fig. 66). The shape and length of the scape is slightly variable within each species. The internal genitalia show small but significant differences from species to species.

The genus currently comprises 15 species: *T. vancouverana*, *T. tuoba* (Chamberlin and Ivie), *T. sonoma* new species, *T. gargopa* (Crosby and Bishop), *T. pallida* Chamberlin and Ivie, *T. haydeni* Chamberlin and Ivie, *T. watona* Chamberlin, *T. speciosa* new species, *T. cognata* new species, *T. ursina* (Crosby and Bishop), *T. delecta* Chamberlin and Ivie, *T. proba* new species, *T. alia* new species, *T. coosi* new species and *T. exilis* new species. The genus is limited to western N. America, with a range extending from California to Alaska.

The genitalia of *Tachygyna* show that this genus is not identical with *Phanetta*, as proposed by Brignoli (1979).

Partial keys to species

Females.—All the *Tachygyna* species have similar epigyna, and diagnosis is based on small differences in the shape of the scape and of the internal structures. Diagnosis in this way seems to be feasible in most cases, but the key must be regarded as provisional, particularly as few specimens of some species were available for study.

1. Scape with ratio X/Y (Fig. 47) ca 0.7-0.85 2
 Scape with ratio X/Y at least 0.95 3
2. Ratio X/Y 0.80-0.85, genital openings well separated and usually darkened (Fig. 55). *haydeni*
 Ratio X/Y 0.70-0.75, genital openings closer together (Figs. 53, 54) *pallida*
3. Ratio X/Y 1.2 or greater. 4
 Ratio X/Y 1.0-1.1 7
4. Scape tapering fairly smoothly to tip (Figs. 50, 51, 52). 5
 Scape differently shaped. 6
5. Ducts well separated anteriorly (Figs. 50, 51)
 *ursina, sonoma* (see species diagnoses)
 Ducts closer together anteriorly (Fig. 52). *delecta*
6. Scape shaped as Figs. 62, 63; internal structures as Fig. 76 *cognata*
 Scape as Fig. 64; internal structures Fig. 79 *coosi*
7. Scape slim posteriorly, slightly widened at tip (Fig. 61) *gargopa*
 Scape differently shaped. 8
8. Ducts fairly widely separated anteriorly (Figs. 45, 46, 48, 49)
 *vancouverana, tuoba* (see species diagnoses)
 Ducts not widely separated anteriorly (Figs. 56, 57, 58, 59, 60)
 *speciosa, proba, exilis, watona* (see species diagnoses)

Males.—Diagnosis of the males is based entirely on the palpal structures.

1. Palpal cymbium raised into a blunt point (Figs. 1, 3, 5, 10). 2
 Palpal cymbium not raised in this way. 4
2. Membranous apophysis narrow (Fig. 1); anterior arm of ED shaped as in Figs. 2, 7; palpal tibia Fig. 32. *vancouverana*
 Membranous apophysis broader (Figs. 3, 5, 10); anterior arm of ED differently shaped at distal end 3
3. Anterior arm of ED (Fig. 4); palpal tibia (Fig. 33). *tuoba*
 Anterior arm of ED (Figs. 6, 8); palpal tibia (Fig. 34). *sonoma*
 Anterior arm of ED (Figs. 9, 11); palpal tibia (Fig. 35). *gargopa*

4. Anterior arm of ED (viewed ectally) simple (e.g. Fig. 20) 5
 Anterior arm of ED more complex (Figs. 22, 26). 9
5. Distal end of anterior arm of ED clearly forked (Figs. 16, 17, 21). 6
 Distal end of anterior arm not forked 7
6. Palpal tibia (Figs. 36, 37); palp (Figs. 13, 15, 16, 17) *pallida*
 Palpal tibia (Fig. 39); palp (Fig. 21) *watona*
7. Anterior arm of ED distinctly short (Fig. 29) *proba*
 Anterior arm of ED longer 8
8. Palpal tibia (Fig. 38); palp (Figs. 18, 19) *haydeni*
 Palpal tibia (Fig. 41); palp (Figs. 24, 25) *cognata*
 Palpal tibia (Fig. 44); palp (Fig. 30, 31). *alia*
9. Palpal tibia (Fig. 42); palp (Figs. 26, 27) *ursina*
 Palpal tibia (Fig. 40); palp (Figs. 22, 23) *speciosa*

Tachygyna vancouverana Chamberlin and Ivie

Figures 1, 2, 7, 32, 45, 46, 65, 66, 67; Map 1

Tachygyna vancouverana Chamberlin and Ivie 1939:61; Roewer 1942:729; Bonnet 1959:4231.

Type.—Male holotype from Parksville, Vancouver Island, British Columbia, September 13, 1935 (Chamberlin and Ivie); in AMNH, examined.

Description.—Total length: female 1.4-1.75 mm, male 1.4-1.55 mm. Carapace: length: female 0.65-0.75 mm, male 0.65-0.70 mm. Pale brown to deep brown, with dusky markings and margins. Abdomen: grey to black. Sternum: brown, heavily suffused with black. Legs: orange-brown to deep brown. TmI: female 0.42-0.48, male 0.40-0.45. Male palp: Figs. 1, 2, 7, 32. Epigynum: Figs. 45, 46, 65, 66, 67.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum, which places it with *T. tuoba* (see key); the two species are separated by the internal duct structures, which in *T. vancouverana* extend well anterior to the spermathecae (Figs. 45, 46, 67), but do not in *T. tuoba* (Figs. 48, 49, 68). The distribution of *T. vancouverana* is also somewhat different from that of *T. tuoba*.

Distribution.—This species is found along the western side of N. America from California to British Columbia, and in Idaho (Map 1). This appears to be the commonest of the *Tachygyna* species.

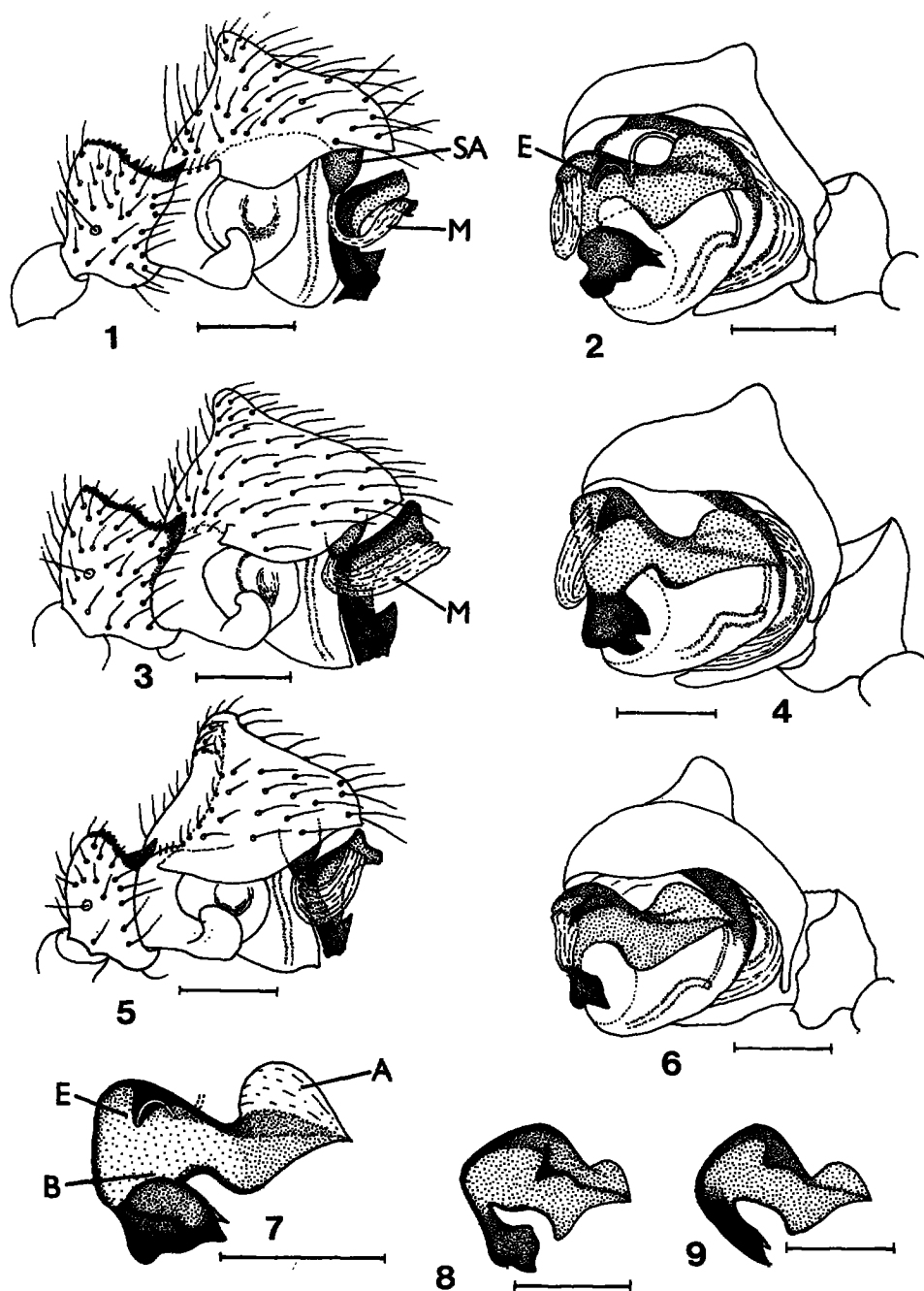
Natural History.—Females have been taken adult in every month, and males in all months except March and August. The only habitats recorded are in moss and leaf litter.

Tachygyna tuoba (Chamberlin and Ivie)

Figures 3, 4, 33, 48, 49, 68; Map 2

Tachygyna tuoba Chamberlin and Ivie 1933:23.

Tachygyna tuoba: Chamberlin and Ivie 1939:62; Roewer 1942:729; Bonnet 1959:4231.



Figs. 1-9.—Male palps. 1, *Tachygyna vancouverana*, ectal; 2, *T. vancouverana*, mesal; 3, *T. tuoba*, ectal; 4, *T. tuoba*, mesal; 5, *T. sonoma*, ectal; 6, *T. sonoma*, mesal; 7, *T. vancouverana*, ED, mesal; 8, *T. sonoma*, ED, anterio-mesal; 9, *T. gargopa*, ED, anterio-mesal. Abbreviations: A, dorsal part of ED; B, anterior arm of ED; E, embolus; M, membrane; SA, suprategular apophysis. Scale lines 0.1 mm.

Type.—Female holotype from South Fork, Raft River, 8 mi. south of Lynn, Utah; in AMNH, examined.

Description.—The two sexes have been taken together; the male is described for the first time. Total length: female 1.65 mm, male 1.60 mm. Carapace: length: female/male 0.75 mm. Orange to brown, with dusky markings and black margins. Abdomen: grey to black. Sternum: deep brown, suffused with black. Legs: orange-brown. TmI: female 0.42-0.45, male 0.40. Male palp: Figs. 3, 4, 33. Epigynum: Figs. 48, 49, 68.

Diagnosis.—This species is very similar to *T. vancouverana*. The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key, and *T. vancouverana* diagnosis).

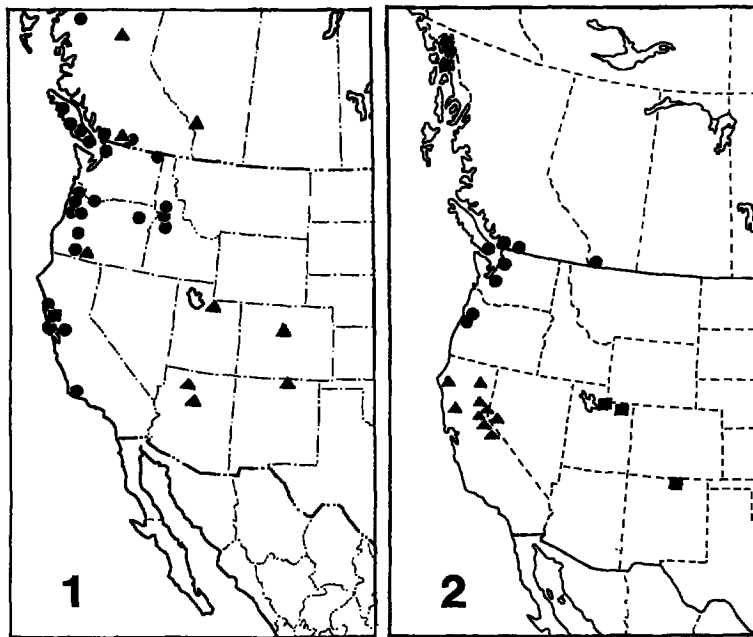
Distribution.—This species appears to have a limited range, with records from mountainous areas in Utah and New Mexico only (Map 2). Very few specimens have been taken.

Natural History.—Both sexes have been recorded in August and October. There is no information on habitat.

Tachygyna sonoma, new species
Figures 5, 6, 8, 34, 51, 69; Map 1

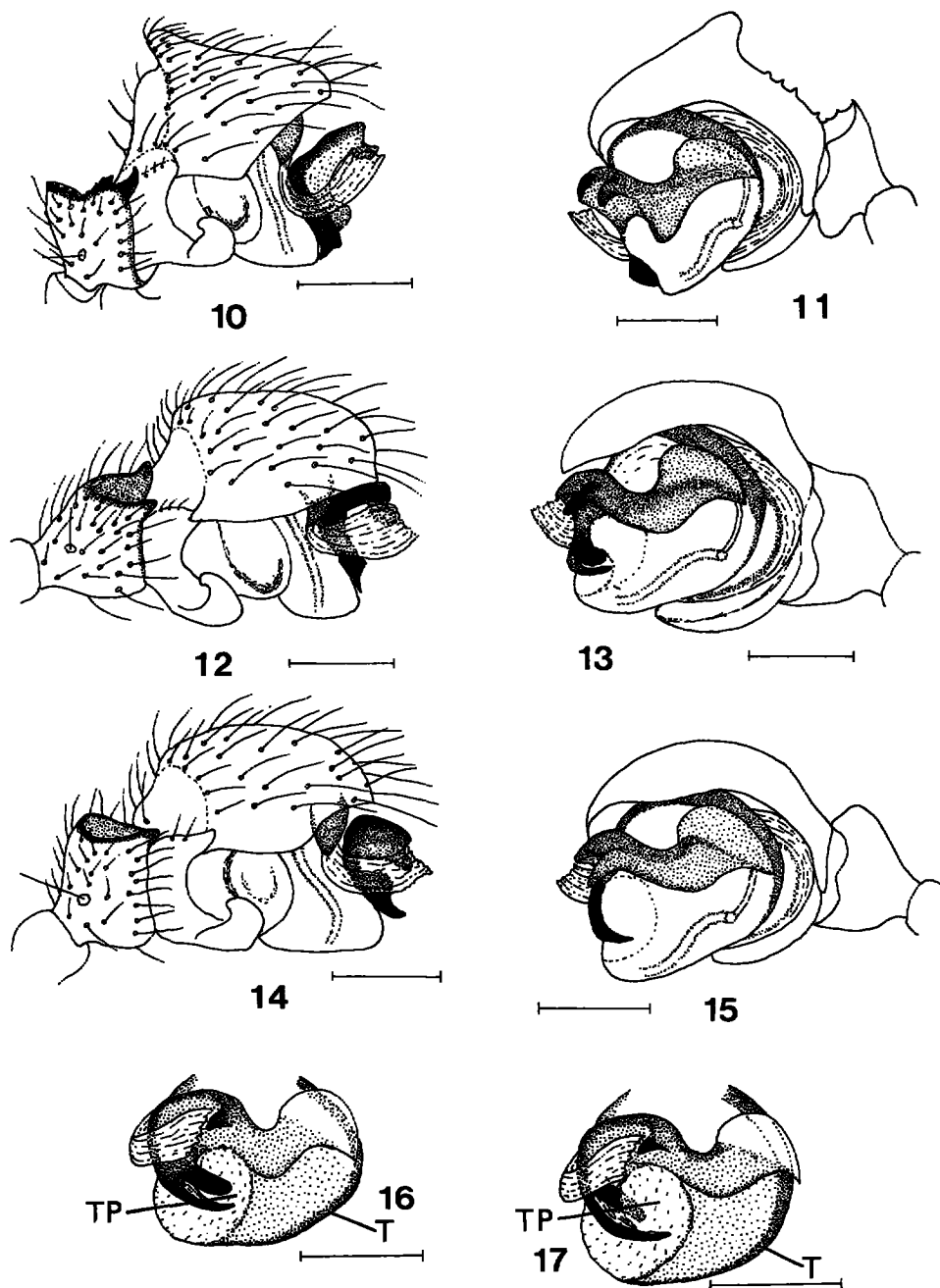
Type.—Male holotype from Maacama Creek, Sonoma Co., California, December 20, 1956 (R. O. Schuster); deposited in AMNH.

Description.—Both sexes were taken together. Total length: female 1.40 mm, male 1.30 mm. Carapace: length: female 0.65 mm, male 0.60 mm. Brown, with dusky markings and margins. Abdomen: grey to black. Sternum: yellow-brown, suffused with black.



Map 1.—Western N. America: distributions of *Tachygyna vancouverana* (circles), *T. haydeni* (triangles), *T. sonoma* (square).

Map 2.—Western N. America: distributions of *Tachygyna ursina* (circles), *T. speciosa* (triangles), *T. tuoba* (squares).



Figs. 10-17.—Male palps. 10, *Tachygyna gargopa*, ectal; 11, *T. gargopa*, mesal; 12, *T. pallida*, ectal; 13, *T. pallida*, mesal; 14, *T. pallida*, another specimen, ectal; 15, *T. pallida*, another specimen, mesal; 16, *T. pallida*, ED and tegulum, antero-mesally; 17, *T. pallida*, another specimen, ED and tegulum, antero-mesally. Abbreviations: T, tegulum; TP, tegular projection. Scale lines 0.1 mm.

Legs: orange-brown. TmI: female/male 0.45-0.47. Male palp: Figs. 5, 6, 8, 34. Epigynum: Figs. 51, 69.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key), which places it with *T. ursina*. The shape of the scape in *T. sonoma* is slightly different from that in *T. ursina* (Fig. 51 cf. Fig. 50), but this difference may not be constant; the two species have very similar internal duct structures (Fig. 69 cf. Fig. 77). It must be regarded as questionable whether the females of *T. sonoma* and *T. ursina* are separable by the epigyna.

Distribution.—Known only from the type locality (Map 1).

Natural History.—Both sexes were adult in December. The habitat was not recorded.

Tachygyna gargopa (Crosby and Bishop)

Figures 9, 10, 11, 35, 61, 70; Map 4

Microneta gargopa Crosby and Bishop 1929:101.

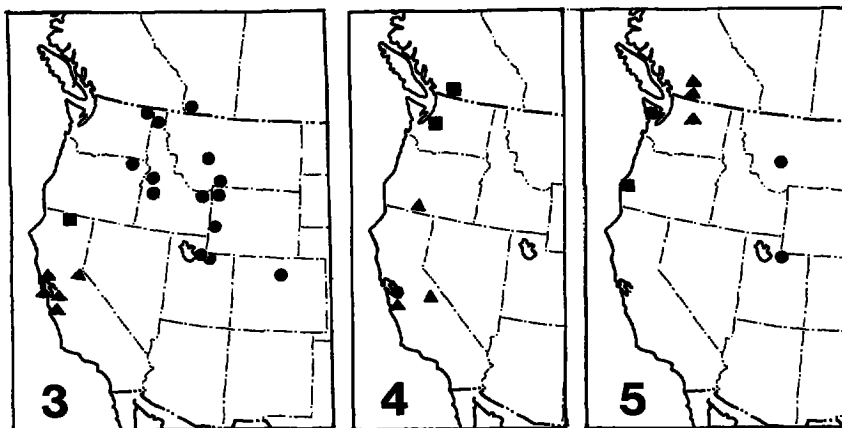
Sciastes gargopa: Crosby and Bishop 1936:63; Bonnet 1958:3951.

Sciastes gargopus: Roewer 1942:648.

Tachygyna gargopa: Ivie 1967:129.

Type.—Some confusion has arisen here. Crosby and Bishop (1929) stated that the type material, from Berkeley, California, January 1920 (H. Dietrich), comprised a holotype male and an allotype female. The holotype in AMNH is a female, and there is a male from the type locality which is labelled "paratype". Both specimens belong to the same species (both sexes of which have been taken together on other occasions), and there is no question to the identity of the species. Another specimen labelled "paratype" from the same locality is *T. cognata*, and this species is mixed with *T. gargopa* in another AMNH vial.

Description.—Total length: female 1.35-1.65 mm, male 1.35-1.45 mm. Carapace: length: female/male 0.60-0.65 mm. Brown to orange, with dusky markings and margins.



Map 3.—Western N. America: distribution of *Tachygyna pallida* (circles), *T. cognata* (triangles), *T. alia* (squares).

Map 4.—Western N. America: distributions of *Tachygyna gargopa* (circles), *T. delecta* (triangles), *T. proba* (squares).

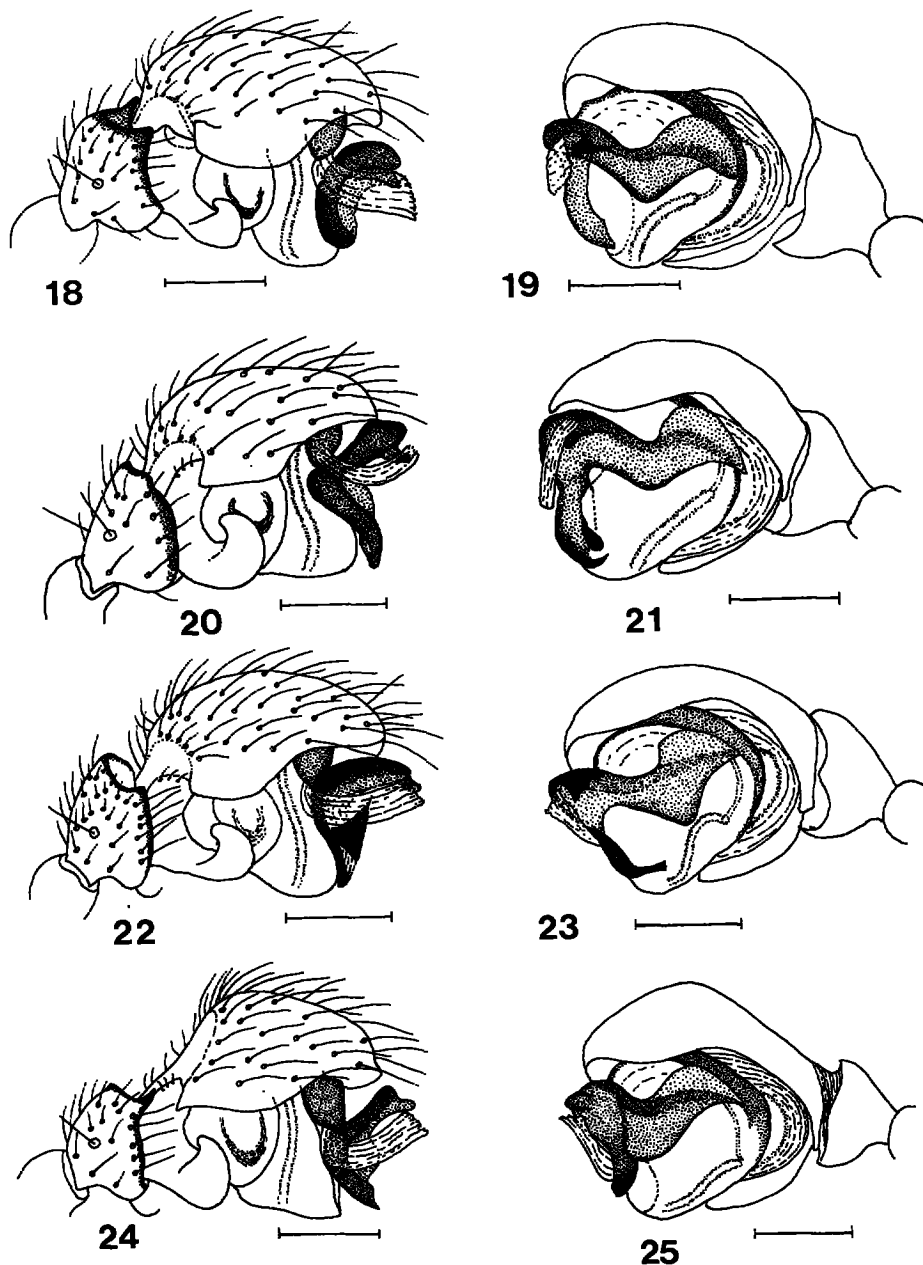
Map 5.—Western N. America: distributions of *Tachygyna watona* (circles), *T. exilis* (triangles), *T. coosi* (squares).

Abdomen: dark grey to black. Sternum: orange. Legs: orange, suffused with grey. TmI: female/male 0.48-0.50. Male Palp: Figs. 9, 10, 11, 35. Epigynum: Figs. 61, 70.

Diagnosis.—The male is diagnosed by the palp, and the female by the epigynum (see keys).

Distribution.—Known only from a small area in California (Map 4).

Natural History.—Females have been taken adult in January, February, August and October, males in January, February and December. The habitat was not recorded.



Figs. 18-25.—Male palps. 18, *Tachygyna haydeni*, ectal; 19, *T. haydeni*, mesal; 20, *T. watona*, ectal; 21, *T. watona*, mesal; 22, *T. speciosa*, ectal; 23, *T. speciosa*, mesal; 24, *T. cognata*, ectal; 25, *T. cognata*, mesal. Scale lines 0.1 mm.

Tachygyna pallida Chamberlin and Ivie
Figures, 12, 13, 14, 15, 16, 17, 36, 37, 53, 54, 71, 72; Map 3

Tachygyna pallida Chamberlin and Ivie 1939:63; Roewer 1942:729; Bonnet 1959:4231.

Type.—The male holotype, from North Fork, Provo River, Uintah Mountains, Utah, July 30, 1936 (W. Ivie) cannot be found, but there are numerous "paratypes" of both sexes in AMNH.

Description.—Total length: female 1.30-1.40 mm, male 1.30-1.35 mm. Carapace: length: female/male 0.55-0.62 mm. Pale yellow to orange, with faint dusky markings and margins. Abdomen: grey to black. Sternum: yellow, suffused with grey or black. Legs: pale yellow to orange. TmI: female 0.34-0.38, male 0.30-0.36. Male palp: Figs. 12, 13, 14, 15, 16, 17, 36, 37. Epigynum: Figs. 53, 54, 71, 72. There is greater variation in the genitalia in this species than in other *Tachygyna* species. In the male the palpal tibia can be as in Figs. 36 or 37, or intermediate between these; and the upper branch of the forked tip of the anterior arm of the ED varies somewhat in shape and is hidden to a greater or lesser degree by the tegular projection (Figs. 16, 17). In the female, the epigynum can be as in Figs. 53, 71 or Figs. 54, 72, or intermediate between these. At one point I suspected that there must be two species involved; the existence of intermediate forms, and the fact that the extreme forms of each sex have been taken with both extreme forms of the other, make this doubtful. The tibial form shown in Fig. 36, and the epigynal form shown in Fig. 53, agree with the figures given by Chamberlin and Ivie (1939).

Diagnosis.—The male is diagnosed by the palp, and the female by the epigynum (see keys).

Distribution.—This species is quite widely distributed (Map 3).

Natural History.—Adult females have been taken in May to November, males in May to October. The only habitat recorded is a meadow.

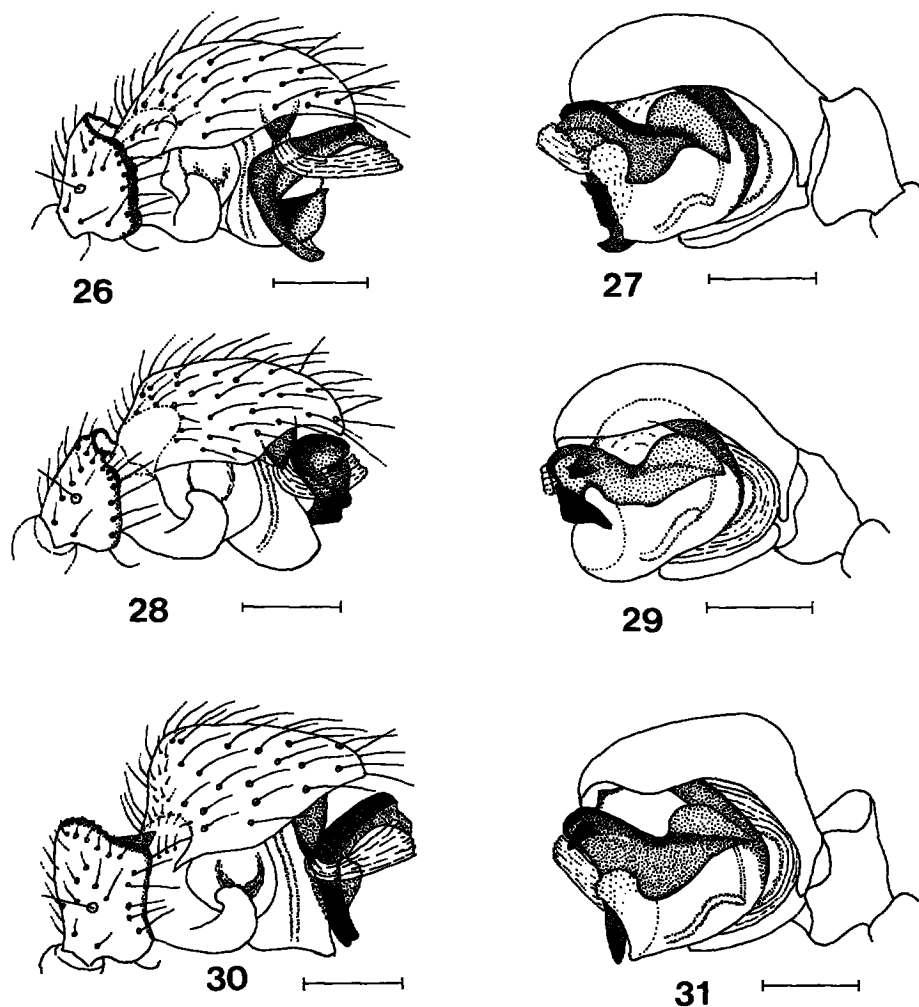
Tachygyna haydeni Chamberlin and Ivie
Figures 18, 19, 38, 55, 73; Map 1

Tachygyna haydeni Chamberlin and Ivie 1939: 63; Roewer 1942:729; Bonnet 1959:4231.

Tachygyna paita Chamberlin 1948:548. NEW SYNONYMY. A specimen labelled as the holotype male of this species has not been found. In AMNH there is a vial labelled "*Sisicottus montanus* (Em.): det. Ivie 1946" with the species name altered in pencil to "*Tachygyna*": this vial contains a single male, with the locality, the date of capture and the name of the collector in full agreement with the data given by Chamberlin (1948). It seems probable that this specimen, which is *T. haydeni*, is the one described by Chamberlin as *T. paita*. The figures given by Chamberlin are also in agreement with this synonymy; and the type locality for *T. paita* is the same as that for *T. haydeni*.

Type.—No specimens labelled as types have been found. A vial in AMNH contains several males and females of *T. haydeni*, collected at the type locality on the correct date (Mirror Lake, Uintah Mountains, Utah, July 28, 1936 [W. Ivie]); these are probably the type material, and have now been labelled as such.

Description.—Total length: female/male 1.35-1.45 mm. Carapace: length: female/male 0.60 mm. Yellow to orange-brown, with dusky markings and margins. Abdomen: grey to black. Sternum: yellow to orange, suffused with grey. Legs: yellow to orange. TmI: female 0.30-0.40, male 0.35-0.44. Male palp: Figs. 18, 19, 38. Epigynum: Figs. 55, 73.



Figs. 26-31.—Male palps. 26, *Tachygyna ursina*, ectal; 27, *T. ursina*, mesal; 28, *T. proba*, ectal; 29, *T. proba*, mesal; 30, *T. alia*, ectal; 31, *T. alia*, mesal. Scale lines 0.1 mm.

Diagnosis.—The male is diagnosed by the palp, and the female by the epigynum (see keys).

Distribution.—This species has a moderately wide range (Map 1).

Natural History.—Females have been taken adult in April, and June to October, males in July to October. Habitats recorded are in spruce duff, and in a pitfall in alpine meadow.

Tachygyna watona Chamberlin
Figures 20, 21, 39, 58, 74; Map 5

Tachygyna watona Chamberlin 1948:549

Type.—Female holotype from Mirror Lake, Uintah Mountains, Utah, October 15, 1939 (W. Ivie); in AMNH, examined.

Description.—Both sexes have been taken together; the male is described for the first time. Total length: female: 1.38-1.45 mm, male 1.25 mm. Carapace: length: female/male 0.60 mm. Yellow to orange, with faint dusky markings and margins. Abdomen: grey to black. Sternum: yellow, with dark margins. Legs: pale orange to brown. TmI: female/male 0.35. Male palp: Figs. 20, 21, 39. Epigynum: Figs. 58, 74.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key), which places it with *T. speciosa*, *T. proba* and *T. exilis*. From these it is separated by the duct structures (Figs. 58, 74, cf. Figs. 56, 57, 75 [*speciosa*], 59, 80 [*proba*] and 60, 81 [*exilis*]), but this separation may not be completely reliable.

Distribution.—Only two localities are known (Map 5); in one of these (Utah) it was taken in company with *T. haydeni*.

Natural History.—Females were taken adult in August and October, males in August. No habitat was recorded.

Tachygyna speciosa, new species
Figures 22, 23, 40, 56, 57, 75; Map 2

Type.—Male holotype from 3 mi. ENE of Manzanita Lake, California, September 11 1965 (J. and W. Ivie); deposited in AMNH.

Description.—Both sexes were taken together. Total length: female 1.35-1.55 mm, male 1.45-1.55. Carapace: length female 0.55-0.62 mm, male 0.60-0.65 mm. Orange, with dusky markings and narrow dark margins. Abdomen: grey. Sternum: yellow to orange, lightly suffused with grey. Legs: TmI: female 0.30-0.35, male 0.35-0.40. Male palp: Figs. 22, 23, 40. Epigynum: Figs. 56, 57, 75.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key), which places it with *T. proba*, *T. exilis* and *T. watona*. From these it is separated by the duct structures (see *T. watona* diagnosis). The duct configuration is very close to that in *T. exilis*; in the few examples seen, this latter species has a differently shaped scape (Fig. 60 cf. Fig. 56) and a more northern distribution pattern.

Distribution.—This species is known from a number of localities in the northern half of California and from Nevada (Map 2).

Natural History.—Females have been taken adult in May to October, males in June to October. The only habitat recorded is in the litter of a mixed conifer forest.

Tachygyna cognata, new species
Figures 24, 25, 41, 62, 63, 76, 82; Map 3

Type.—Male holotype from Pebble Beach, California, March 25, 1957 (A. M. Nadler); deposited in AMNH.

Description.—Both sexes were taken together. Total length: female 1.55-1.80 mm, male 1.35 mm. Carapace: length: female 0.62-0.66 mm, male 0.62 mm. Brown to deep brown, with darker markings and margins. Abdomen: grey to black. Sternum: yellow to brown, suffused with black. Legs: brown. TmI: female 0.45-0.50, male 0.42. Male palp: Figs. 24, 25, 41. Epigynum: Figs. 62, 63, 76, 82.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key, and also *T. coosi* diagnosis).

Distribution.—Known only from California (Map 3), where it has been taken in company with *T. gargopa*.

Natural History.—Both sexes were taken adult in January, March and November. No habitat was recorded.

Tachygyna ursina (Bishop and Crosby), new combination

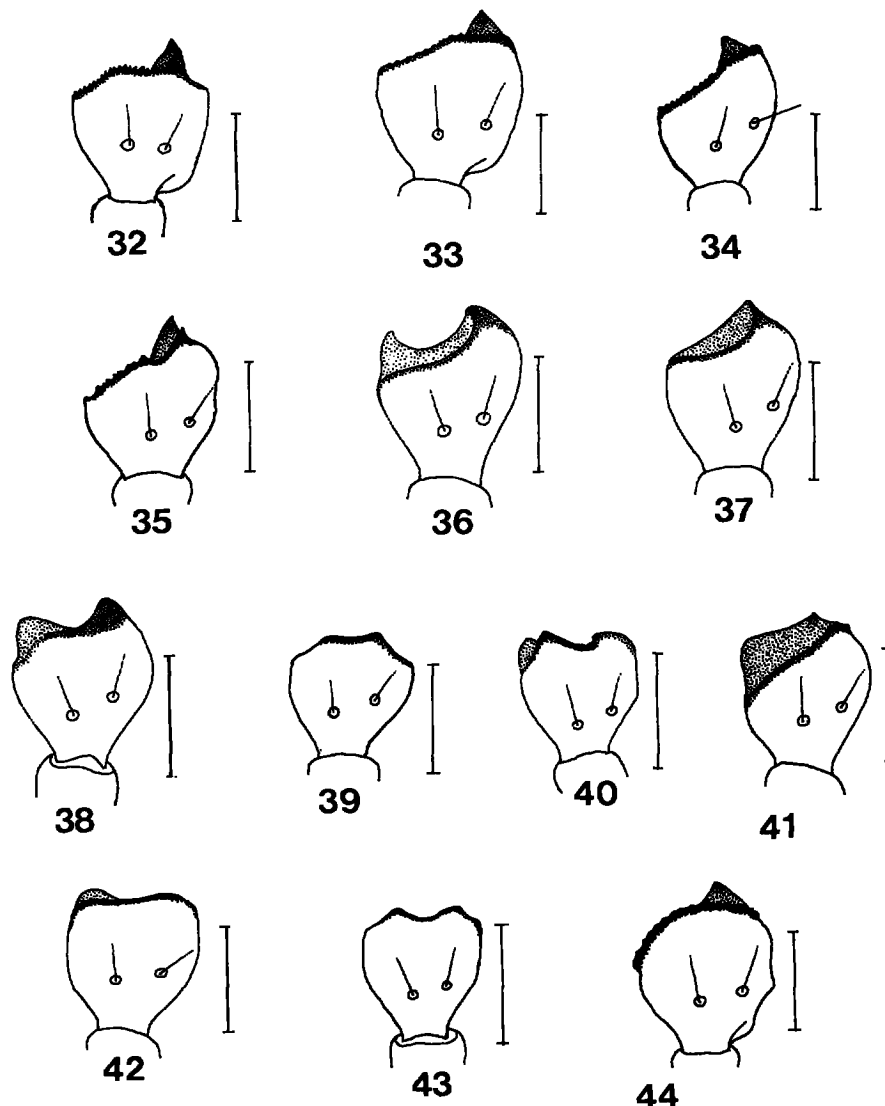
Figures 26, 27, 42, 50, 77; Map 2

Sciastes ursinus Bishop and Crosby 1938: 83 (male); Roewer 1942:648; Bonnet 1958:3952.

Tachygyna alaskensis Chamberlin and Ivie 1947:49 (female); holotype female (in AMNH) examined.

NEW SYNONYMY.

Tachygyna sima Chamberlin 1948:549; the epigynum is missing from the type (AMNH), but Chamberlin's Figure 137, and the type locality, support this synonymy. **NEW SYNONYMY.**



Figs. 32-44.—Male palpal tibiae, dorsal. 32, *Tachygyna vancouverana*; 33, *T. tuoba*; 34, *T. sonoma*; 35, *T. gargopa*; 36, *T. pallida*; 37, *T. pallida*, another specimen; 38, *T. haydeni*; 39, *T. watona*; 40, *T. speciosa*; 41, *T. cognata*; 42, *T. ursina*; 43, *T. proba*; 44, *T. alia*. Scale lines 0.1 mm.

Type.—Holotype male from Longmire, Washington, August 22, 1927 (Crosby); in AMNH, examined.

Description.—The male and female (*alaskensis*) have been taken together on more than one occasion. Total length: female 1.45-1.60 mm, male 1.45 mm. Carapace: length: female 0.65-0.70 mm, male 0.60 mm. Yellow-brown to dark brown, with dusky markings and margins. Abdomen: grey to black. Sternum: orange to brown, suffused with black. Legs: yellow to orange. TmI: female/male 0.40-0.45. Male palp: Figs. 26, 27, 42. Epigynum: Figs. 50, 77; sometimes very dark in color, with spermathecae and ducts barely visible in uncleared specimens.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key, and *T. sonoma* diagnosis).

Distribution.—This species is found in the more northerly areas of the far west of N. America (Map 2).

Natural History.—Females have been taken adult in February, May to July, October and December, males in August and October. The species has been taken on shrubs, and in a pitfall amongst shrubs.

Tachygyna delecta Chamberlin and Ivie

Figures 52, 78; Map 4

Tachygyna delecta Chamberlin and Ivie 1939:62; Roewer 1942:729; Bonnet 1959:4231.

Type.—Female holotype from Pinehurst, Oregon, September 9, 1935 (Chamberlin and Ivie); in AMNH, examined.

Description.—Only the female is known. Total length: female 1.35-1.70 mm. Carapace: length: female 0.60-0.66 mm. Brown to orange, with dusky markings and black margins. Abdomen: black. Sternum: brown to orange, suffused with black. Legs: yellow to orange. TmI: female 0.40. Epigynum: Figs. 52, 78.

Diagnosis.—The female is diagnosed by the epigynum (see key).

Distribution.—Known only from a small number of females collected in Oregon and California (Map 4).

Natural History.—The female was taken adult in April, September and December. Nothing was recorded on habitat.

Tachygyna proba, new species

Figures 28, 29, 43, 59, 80; Map 4

Type.—Male holotype from 11 mi. W. of Allison Pass, Manning Provincial Park, British Columbia, September 9, 1974, (B. D. Ainscough); deposited in CNC, Ottawa.

Description.—Both sexes were taken together. Total length: female 1.30-1.65 mm, male 1.25-1.40 mm. Carapace: length: female/male 0.60-0.65 mm. Yellow to orange, with dusky markings and margins. Abdomen: grey to black, sometimes with faint paler chevrons posteriorly. Sternum: yellow to orange, suffused with black. Legs: pale yellow to orange. TmI: female/male 0.40. Male palp: Figs. 28, 29, 43. Epigynum: Figs. 59, 80.

Diagnosis.—The male is diagnosed by the palp (see key). The female is diagnosed by the epigynum (see key), which groups it with *T. speciosa*, *T. exilis* and *T. watona*; from these it is separated from the duct structure (see *T. watona* diagnosis).

Distribution.—Known only from two localities, in British Columbia and Washington (Map 4).

Natural History.—The female has been taken adult in July and September, the male in September. The only habitat recorded is in moss and leaf litter.

Tachygyna alia, new species

Figures 30, 31, 44; Map 3

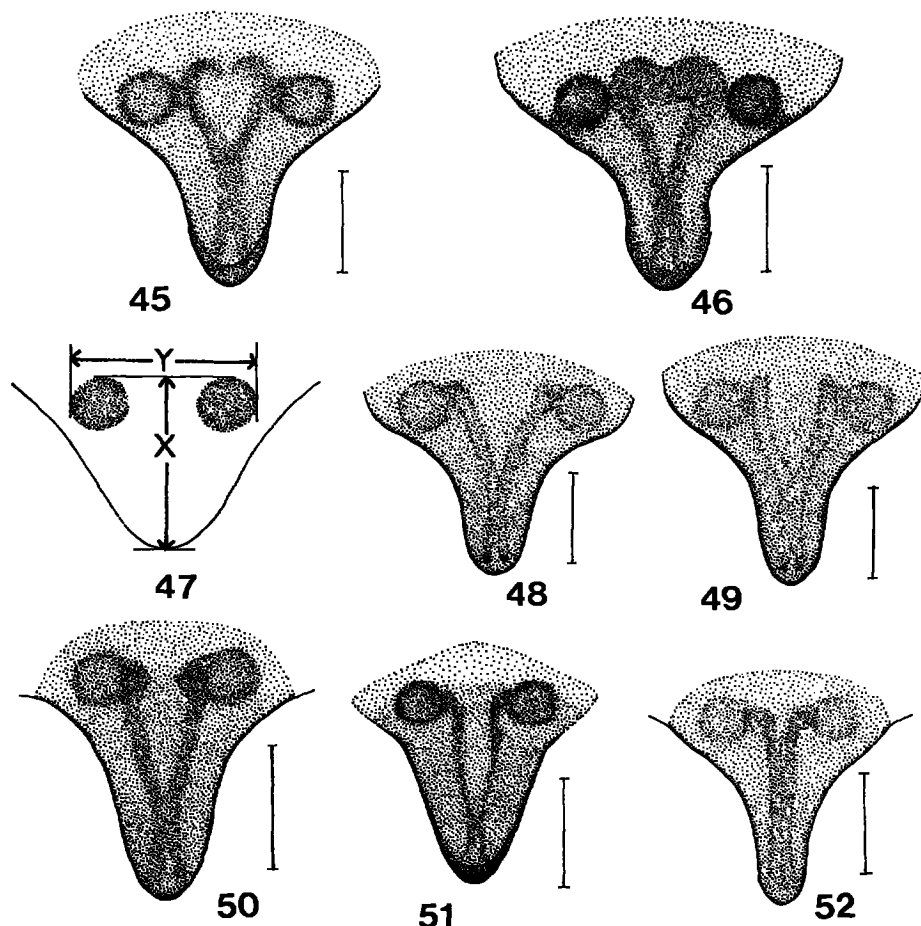
Type.—Male holotype from Macdoel, Siskiyou Co., California, June 13, 1962 (J. Schuh); deposited in AMNH.

Description.—Only the male is known. Total length: male 1.55 mm. Carapace: length: male 0.67 mm. Chestnut-brown, with darker markings and margins. Abdomen: black. Sternum: orange-brown, heavily suffused with black. Legs: orange-brown. TmI: male 0.47. Male palp: Figs. 30, 31, 44. This spider may possibly be the male of *T. delecta*.

Diagnosis.—The male is diagnosed by the palp (see key).

Distribution.—Known only from the type locality (Map 3).

Natural History.—The male was adult in June. Nothing was recorded on habitat.



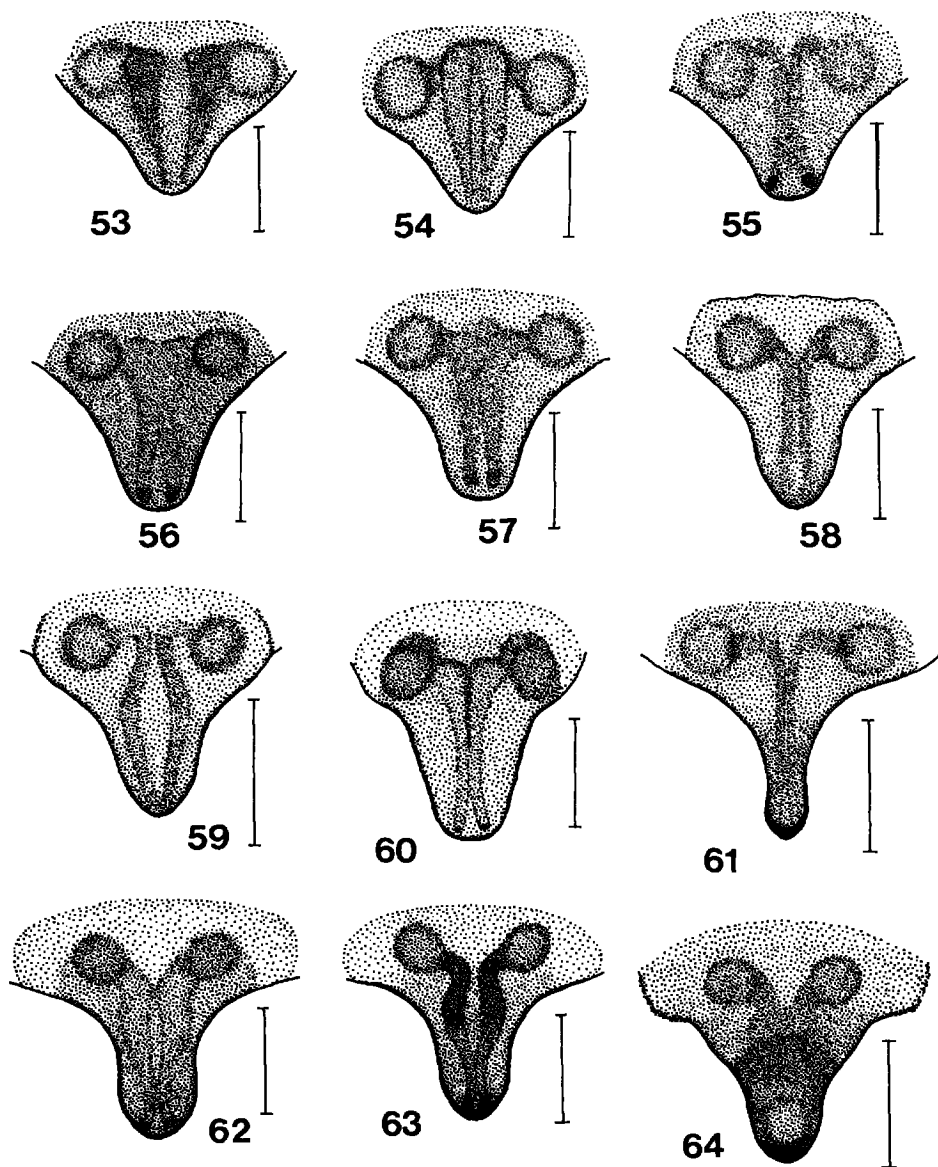
Figs. 45-52.—Epigyna, ventral. 45, *Tachygyna vancouverana*; 46, *T. vancouverana*, another specimen; 47, Epigynum, diagrammatic, see text; 48, *T. tuoba*, type; 49, *T. tuoba*, another specimen; 50, *T. ursina*; 51, *T. sonoma*; 52, *T. delecta*. Scale lines 0.1 mm.

Tachygyna coosi, new species

Figures 64, 79, 83; Map 5

Type.—Female holotype from Coos Bay, Oregon, September 10, 1947 (I. Newell); deposited in AMNH.

Description.—Only the female is known. Total length: female 1.55 mm. Carapace: length: female 0.60-0.70 mm. Orange to deep orange-brown, with dusky markings and margins. Abdomen: black. Sternum: orange, suffused with black. Legs: brown to



Figs. 53-64.—Epigyna, ventral. 53, *Tachygyna pallida*; 54, *T. pallida*, another specimen; 55, *T. haydeni*; 56, *T. speciosa*; 57, *T. speciosa*, another specimen; 58, *T. watona*; 59, *T. proba*; 60, *T. exilis*; 61, *T. gargopa*; 62, *T. cognata*; 63, *T. cognata*, another specimen; 64, *T. coosi*. Scale lines 0.1 mm.

orange-brown. TmI: 0.45-0.50. Epigynum: Figs. 64, 79, 83; there is a shallow dimple near the tip of the scape.

Diagnosis.—The female is diagnosed by the epigynum (see key). In some specimens the epigynum is at first sight rather similar to those in some specimens of *T. vancouverana* and *T. cognata*. The spermathecae are however much closer together in *T. coosi* than in *T. vancouverana*, and the profile of the scape differs from that of *T. cognata* (Fig. 83 cf. Fig. 82); the dimple on the scape is also absent from *T. cognata* and *T. vancouverana*.

Distribution.—Known only from Oregon and Washington (Map 5).

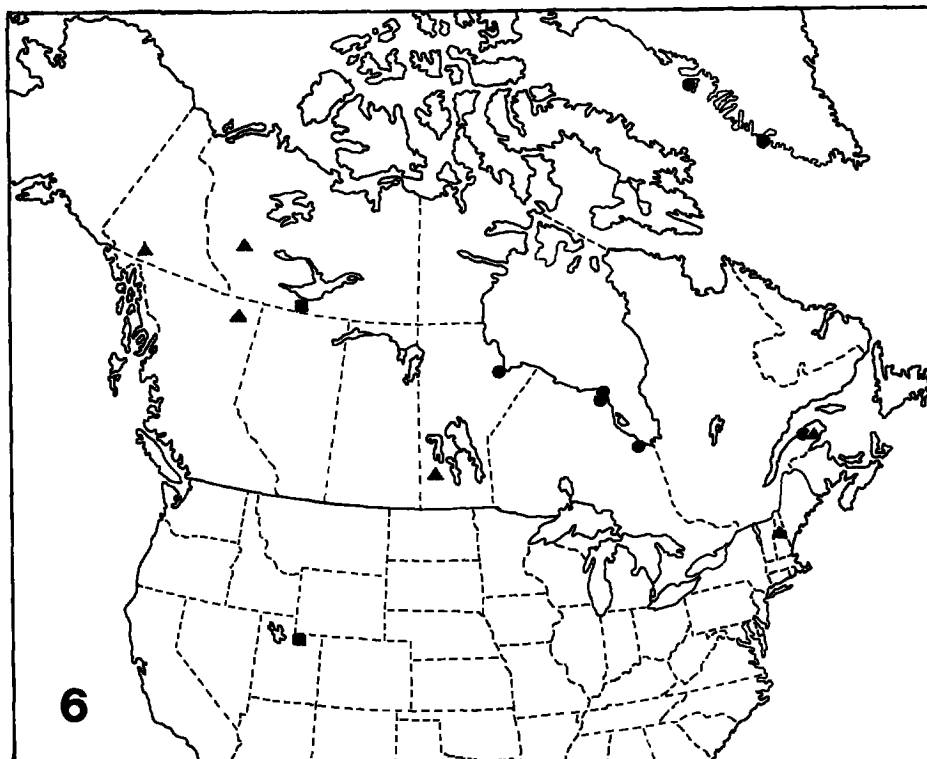
Natural History.—The female was taken adult in September and October. Nothing was recorded on habitat.

Tachygyna exilis, new species

Figures 60, 81; Map 5

Type.—Female holotype from 11 mi. W. of Allison Pass, Manning Provincial Park, British Columbia, September 9, 1974 (B. D. Ainscough); deposited in CNC, Ottawa.

Description.—Only the female is known. Total length: female 1.30 mm. Carapace: length: female 0.55 mm. Pale yellow. Abdomen: almost white. Sternum: pale yellow, mottled and margined with grey. Legs: pale yellow-brown. TmI: female 0.35. Epigynum: Figs. 60, 81.



Map 6.—North America: distributions of *Wabasso questio* (circles), *W. cacuminatus* (triangles), *Sciastes hastatus* (squares).

Diagnosis.—The female is diagnosed by the epigynum (see key), which groups it with *T. speciosa*, *T. proba* and *T. watona*. From these species it is separated by the duct configurations (see *T. watona* and *T. speciosa* diagnoses).

Distribution.—Known only from Washington and British Columbia (Map 5).

Natural History.—Females were taken adult in September. Habitats recorded were in moss, in leaf litter, and in pine and fir litter.

Subbekasha, new genus

Type species.—*Subbekasha flabellifera*, new species.

Etymology.—From Subbekashe, the spider, in "The Song of Hiawatha" by Longfellow. The generic name is feminine.

Definition.—The single member of this genus has a total length of 2.2-2.8 mm. The carapace (female) is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively slender, with tibia I 1/d (female) ca. 7. The tibial spines are 2221. Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV: TmI is 0.50-0.55. The female palpal tibia has 3 trichobothria. The epigynum is a scape, which is slightly expanded and rounded distally (Fig. 84); the genital openings are near the tip of the scape on the dorsal side. The scape is similar to that of *Tachygyna*, but lacks the cavity between the dorsal and ventral plates which is present in that genus. No males assignable to the genus are known. The genus is endemic to N. America.

This genus is separated from *Tachygyna* chiefly on the basis of the epigynal structure; the eventual discovery of the male will show whether this separation is justified.

Subbekasha flabellifera, new species

Figures 84, 85, 86; Map 10

Type.—Female holotype from Fort Qu'Appelle, Saskatchewan, June 13, 1963 (A. L. Turnbull); deposited in CNC, Ottawa.

Description.—The male is not known. Total length: female 2.2-2.8 mm. Carapace: length: female 0.90-1.25 mm. Orange, with dusky markings and margins. Abdomen: grey. Sternum: orange, suffused with black. Legs: pale orange to orange. TmI: female 0.50-0.55. Epigynum: Figs. 84, 85, 86; the scape is shaped rather like a fan.

Diagnosis.—The female is diagnosed by the epigynum, which bears a distinct resemblance to those of some *Tachygyna* species, but lacks the cavity between the ventral and dorsal plates.

Distribution.—Known only from three adjacent localities in Saskatchewan (Map 10).

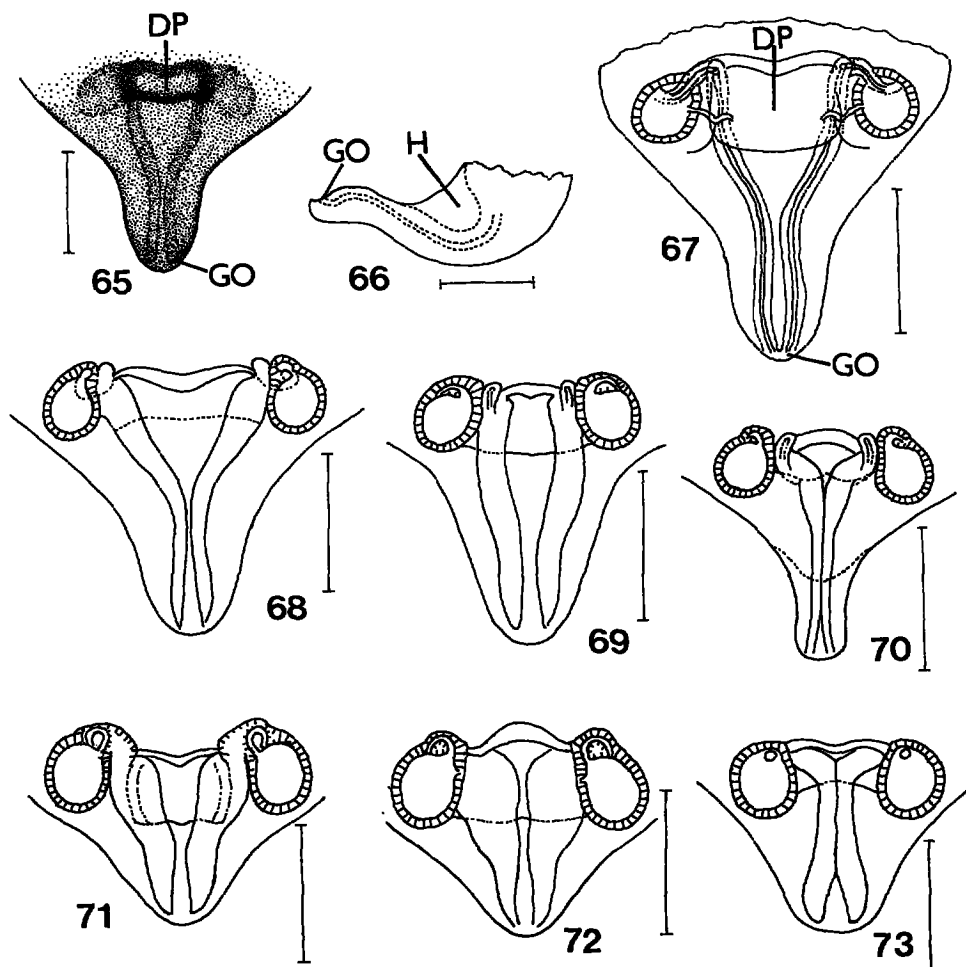
Natural History.—The females taken were adult in June. Habitats recorded were on a rocky lake shore, on shrubs, and under paper in a dead wood.

Tunagyna Chamberlin and Ivie

Tunagyna Chamberlin and Ivie 1933:23; Roewer 1942:652; Bonnet 1959:4736. Type species: *Tmetiscus debilis* Banks, by original designation.

Definition.—The members of this genus have a total length of 1.3-2.1 mm. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine

form. The legs are of moderate length, with tibia I 1/d (female) 5.5-6. The tibial spines are 2221 in both sexes. Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV; Tml is ca 0.40. The palpal tibia has two trichobothria dorsally in both sexes. The male palpal tibia has short apophyses (Fig. 88). The paracymbium of the male palp (Fig. 87) is more complex than usual in the erigonines. The tegulum (Figs. 87, 89) is produced anteriorly into a lightly sclerotized pointed section; the suprattegulum is weakly sclerotized and carries a short pointed apophysis near the distal end. The broad stalk leading to the ED is situated near to the posterior end of the palpal organ; a long, lightly sclerotized apophysis (M, Fig. 89) arises from the region of the stalk. The ED, which is relatively complex, comprises a lightly sclerotized radical section which carries (i) a long sclerotized arm, curved and pointed anteriorly, with a small tooth on the ventral margin, and (ii) the slender embolus, which arises from the posterior end of the radical section and runs free in a curved path along the mesal side of the palp, with the distal end lying on the stalk



Figs. 65-73.—Epigyna. 65, *Tachygyna vancouverana*, dorsal; 66, *T. vancouverana*, lateral; 67, *T. vancouverana*, internal, dorsal; 68, *T. tuoba*, internal, dorsal; 69, *T. sonoma*, internal, dorsal; 70, *T. gargopa*, internal, dorsal; 71, *T. pallida*, internal, dorsal; 72, *T. pallida*, another specimen, internal, dorsal; 73, *T. haydeni*, internal dorsal. Abbreviations: DP, dorsal plate; GO genital openings; H, hollow. Scale lines 0.1 mm.

apophysis. The epigynum is a long scape (Figs. 90, 91, 93), which carries the genital openings on the dorsal side close to the posterior end. In the type species, the internal ducts from the spermathecae follow a sinuous path before running along the scape (Fig. 92). In another species, however, this coiling is absent (Fig. 94).

The genus, which is endemic to N. America, contains two species, which are separated by the genitalia.

Tunagyna debilis (Banks)

Figures 87-92; Map 7

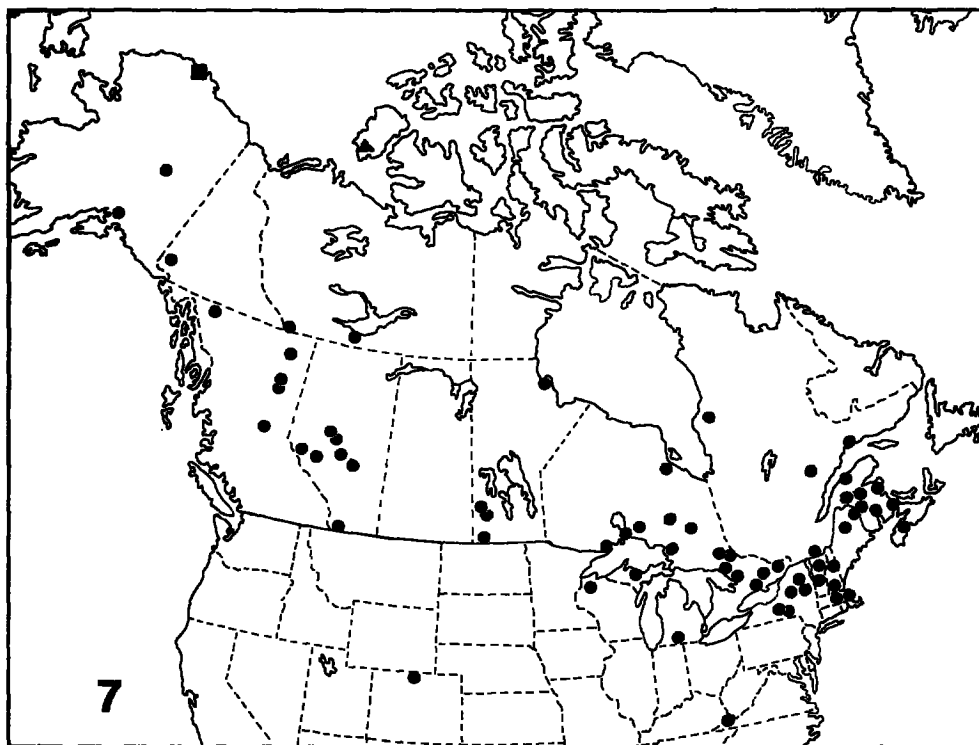
Tmeticus debilis Banks 1892:40.

Tunagyna debilis: Chamberlin and Ivie 1933:23; Roewer 1942:652; Bonnet 1959:4737; v. Helsdingen 1973:39; Kaston 1981:175, 903.

Type.—Male holotype from Ithaca, New York; in MCZ, examined. The females in this type material are not *T. debilis* Banks.

Description.—Total length: female 2.0-2.1 mm, male 1.75-2.0 mm. Carapace: length: female 0.90 mm, male 0.80-0.90 mm. Pale brown to brown, with dusky markings and margins. Abdomen: pale grey to black. Sternum: brown, heavily suffused with black. Legs: brown to pale orange-brown. TmI: female/male 0.38-0.42. Male palp: Figs. 87, 88, 89. Epigynum: Figs. 90, 91, 92; the scape varies somewhat in length.

Diagnosis.—The male is diagnosed by the very characteristic form of the palpal organs (Figs. 87, 89). The female is readily recognized by the long epigynal scape (Figs. 90, 91).



Map 7.—North America: distributions of *Tunagyna debilis* (circles), *Masikia atra* (triangle), *M. caliginosa* (square).

The female is distinguished from *T. antricola* by the bifid tip of the scape in the latter species (Fig. 93), and by the internal duct configuration (Fig. 92, cf. Fig. 94). The geographical range of *T. debilis* is also quite distinct from that of *T. antricola*.

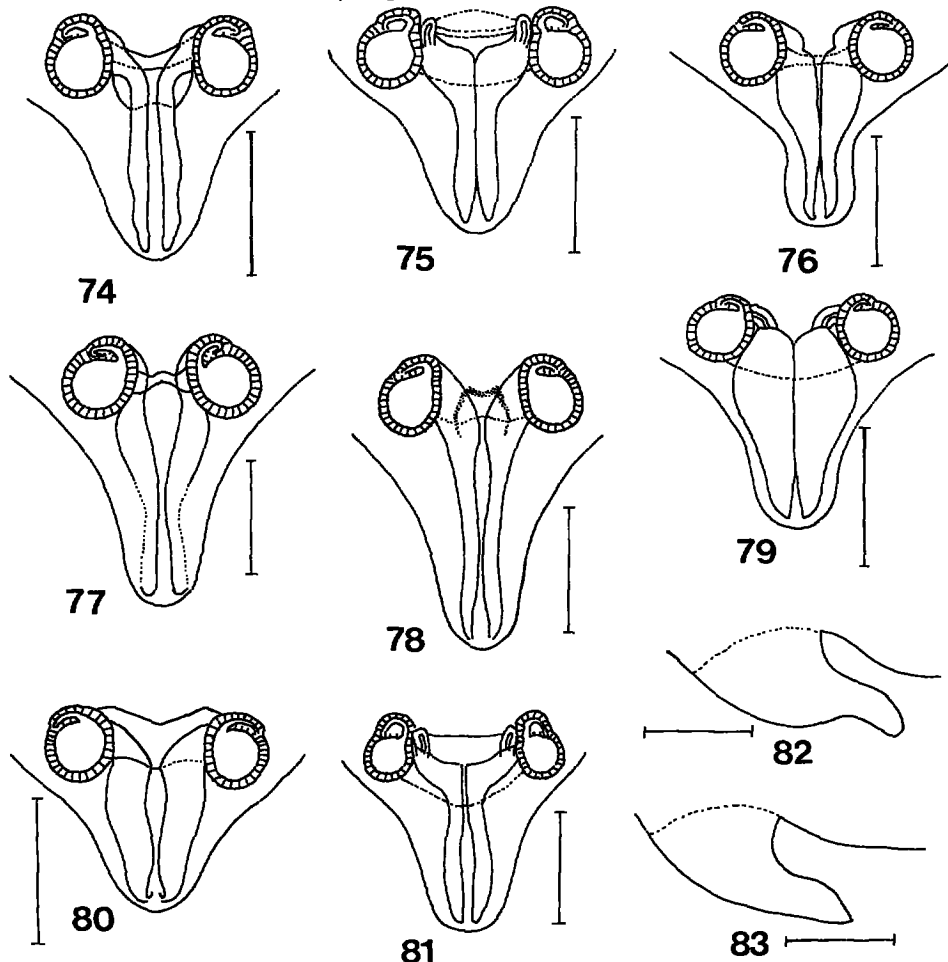
Distribution.—This common species is widespread over the northern half of the N. American continent (Map 7); there is one record from the mountains of Colorado.

Natural History.—Females have been taken adult in May to November, males in March to November. Habitats recorded are in spruce, fir and birch; in moss and litter; in soil samples; in a maple swamp; in grass and fields; in woods; on a tree, and on fences (presumably preparing to aeronaut).

Tunagyna antricola, new species

Figures 93, 94; Map 9

Type.—Female holotype from a small cave 15 mi. NE of Jacala, Hidalgo, Mexico, August 18, 1963 (J. and W. Ivie); deposited in AMNH.



Figs. 74-83.—Epigyna. 74, *Tachygyna watona*, internal, dorsal; 75, *T. speciosa*, internal, dorsal; 76, *T. cognata*, internal, dorsal; 77, *T. ursina*, internal, dorsal; 78, *T. delecta*, internal, dorsal; 79, *T. coosi*, internal, dorsal; 80, *T. proba*, internal, dorsal; 81, *T. exilis*, internal, dorsal; 82, *T. cognata*, lateral; 83, *T. coosi*, lateral. Scale lines 0.1 mm.

Description.—The species is known only from the female holotype. Total length: female 1.30 mm. Carapace: length: female 0.62 mm. Pale orange, with dusky markings and margins. Abdomen: grey. Sternum: yellow, suffused with black. Legs: pale yellow to orange-brown. TmI: female 0.40. Epigynum: Figs. 93, 94; the long scape is pale in color and translucent, with the tip weakly bifid. In the absence of the male, it cannot be completely certain that this species is correctly placed in *Tunagyna*.

Diagnosis.—The female is diagnosed by the epigynum (Fig. 93, 94); see *T. debilis* diagnosis.

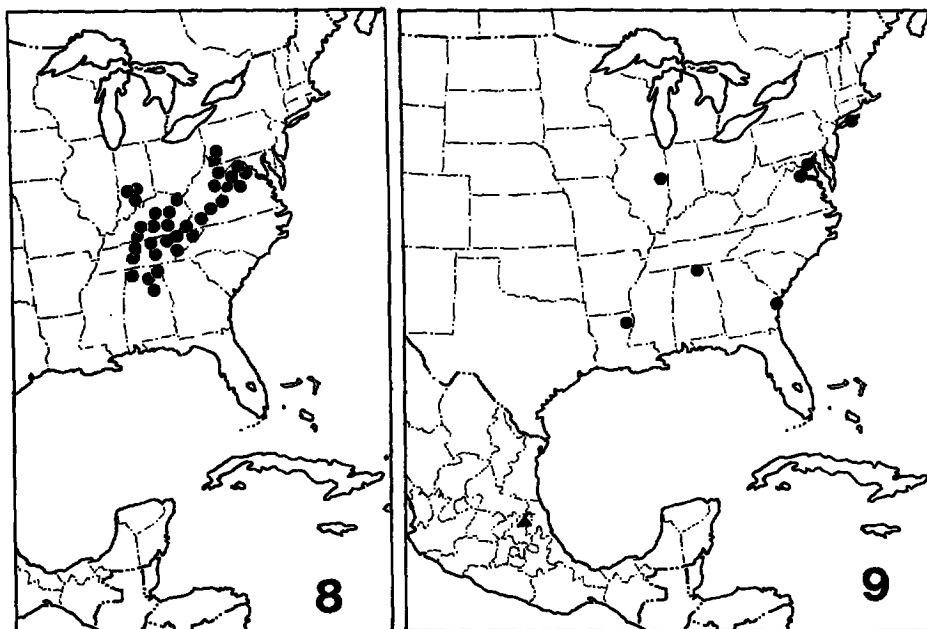
Distribution.—Known only from the type locality (Map 9).

Natural History.—The female was taken inside a small cave. The eyes are not reduced in size, and the species is probably not troglobitic. The female was adult in August.

Phanetta Keyserling

Phanetta Keyserling 1886:124; Roewer 1942:535; Bonnet 1958:3499. Type species: *Linyphia subterranea* Emerton, by monotypy.

Definition.—The only known member of this genus is a cave-living spider of total length 1.55–2.0 mm. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively long and slender, with tibia I 1/d (female) 9. The tibial spines are long, 2221 in both sexes. Metatarsi I–III have a trichobothrium, which is absent on metatarsus IV; TmI is ca. 0.50. The palpal tibia has 2 trichobothria dorsally in both sexes. The male palpal tibia has several small apophyses (Fig. 99). The suprategular apophysis (Fig. 95) is a broad, translucent brown tongue. The lightly sclerotized ED is relatively complex, comprising (Fig. 97) a basal portion from which arises the long slender embolus (E) and a long, moderately sclerotized apophysis



Map 8.—Eastern N. America: distribution of *Phanetta subterranea* (circles).

Map 9.—Eastern N. America: distributions of *Souessoula parva* (circles), *Tunagyna antricola* (triangle).

(L) which has a superficial resemblance to the "lamella characteristica" of some linyphiines. The distal end of the embolus lies on a broad membranous lamella (M) which arises from the region of the stalk. The epigynum is a large, more or less triangular scape (Figs. 96, 100), which carries the genital openings on the dorsal side near to the tip. The internal ducts follow a sinuous pathway from the spermathecae to the openings (Fig. 98).

Roewer (1942) regarded the genus as linyphiine, while Bonnet (1958) placed it with the erigonines. As noted above, the tracheae are of the erigonine form.

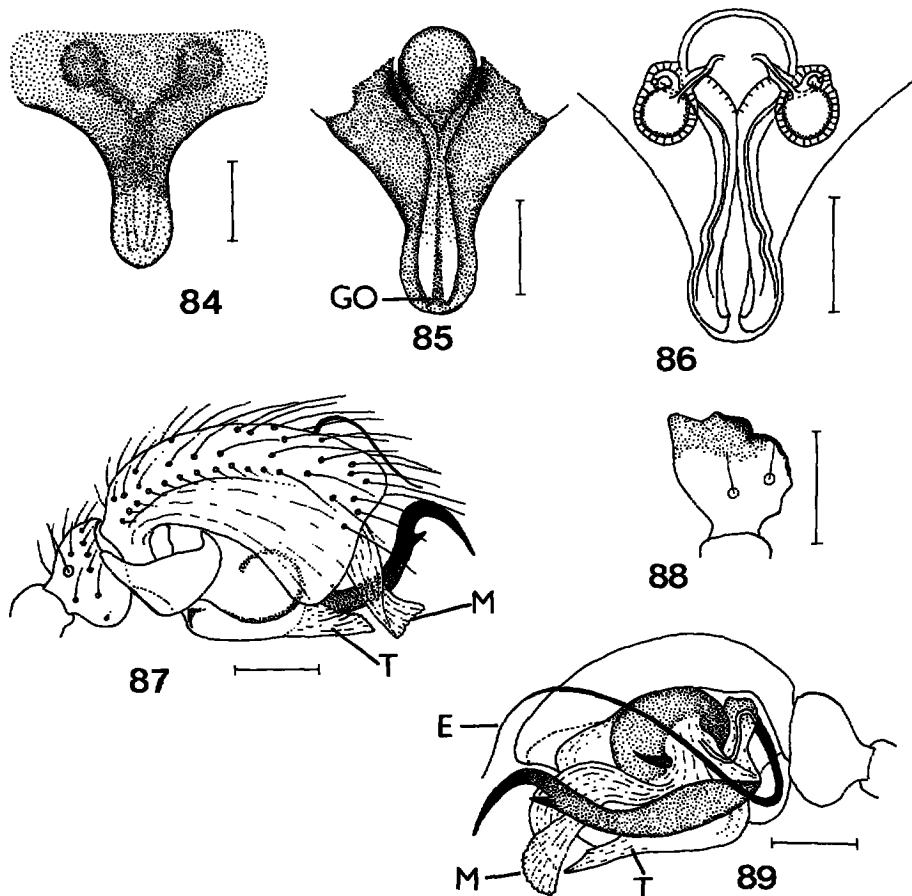
Phanetta subterranea (Emerton)

Figures 95-100; Map 8

Linyphia subterranea Emerton 1875:279.

Phanetta subterranea: Keyserling 1886:125; Roewer 1942:535; Bonnet 1958:3499.

Type.—Female holotype from Wyandotte Cave, Crawford Co., Indiana (Packard); in MCZ, examined.



Figs. 84-89.—84, *Subbekasha flabellifera*, epigynum, ventral; 85, *S. flabellifera*, epigynum, dorsal; 86, *S. flabellifera*, epigynum, internal, dorsal; 87, *Tunagyna debilis*, male palp, ectal; 88, *T. debilis*, male palpal tibia, dorsal; 89, *T. debilis*, male palp, mesal. Abbreviations: E, embolus; GO, genital openings; M, membranous apophysis; T, tegulum. Scale lines 0.1 mm.

Description.—Total length: female 1.75-2.0 mm, male 1.55-1.8 mm. Carapace: length: 0.85-0.90 mm, male 0.80-0.90 mm. Pale yellow to pale brown. Eyes: these vary from well-formed and pigmented to almost completely absent. Abdomen: pale grey to almost white, clothed with long hairs. Sternum: pale yellow to practically white. Legs: pale brown to almost white; long and thin, with long tibial spines. TmI: female 0.48-0.55, male 0.46-0.50. Male palp: Figs. 95, 97, 99. Epigynum: Figs. 96, 98, 100; the length and width of the scape show some variation.

Diagnosis.—This species is diagnosed by its habitat (caves) and by the genitalia. The male palp is characteristic, and the female epigynum, with its triangular shape and rather complex duct configuration, cannot be mistaken for that of any other species.

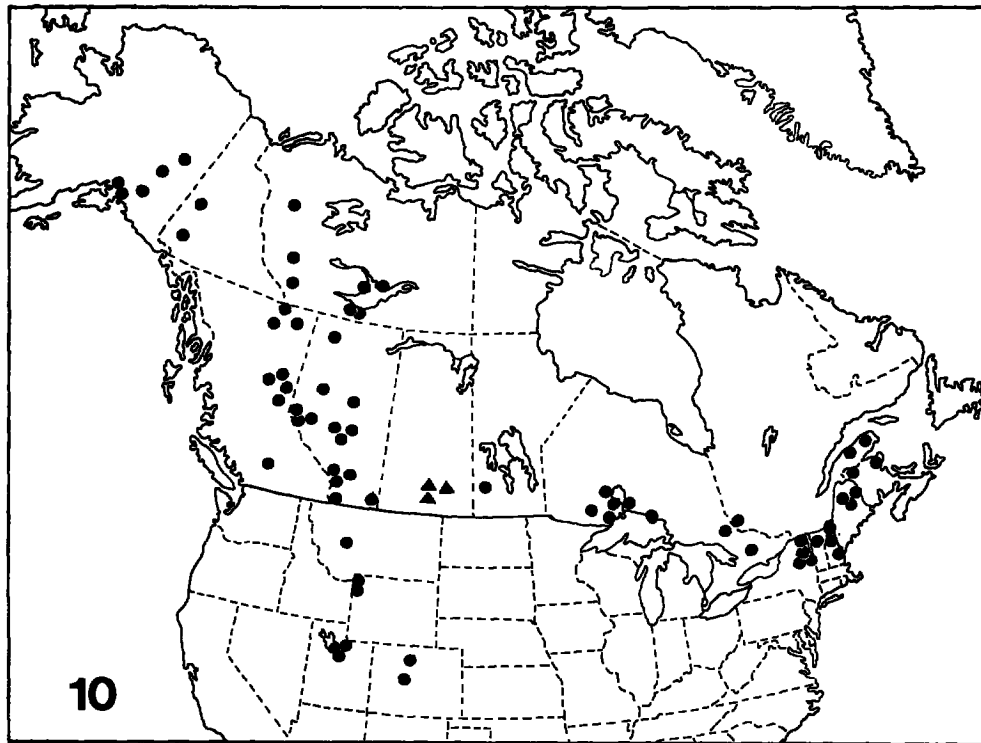
Distribution.—This species is common in caves of the Appalachian region (Map 8).

Natural History.—This species is a troglobyte. Both sexes have been taken adult in all months of the year, but females seem to be significantly more numerous than males.

Souessoula Crosby and Bishop

Souessoula Crosby and Bishop 1936:62; Roewer 1942:651; Bonnet 1958:4095. Type species: *Tmetiscus parvus* Banks, by original designation.

Definition.—The single known member of this genus has a total length of 1.45-1.9 mm. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are of moderate length, with tibia I 1/d (female) ca. 6. The tibial



Map 10.—North America: distributions of *Diplocentria bidentata* (circles), *Subbekasha flabellifera* (triangles).

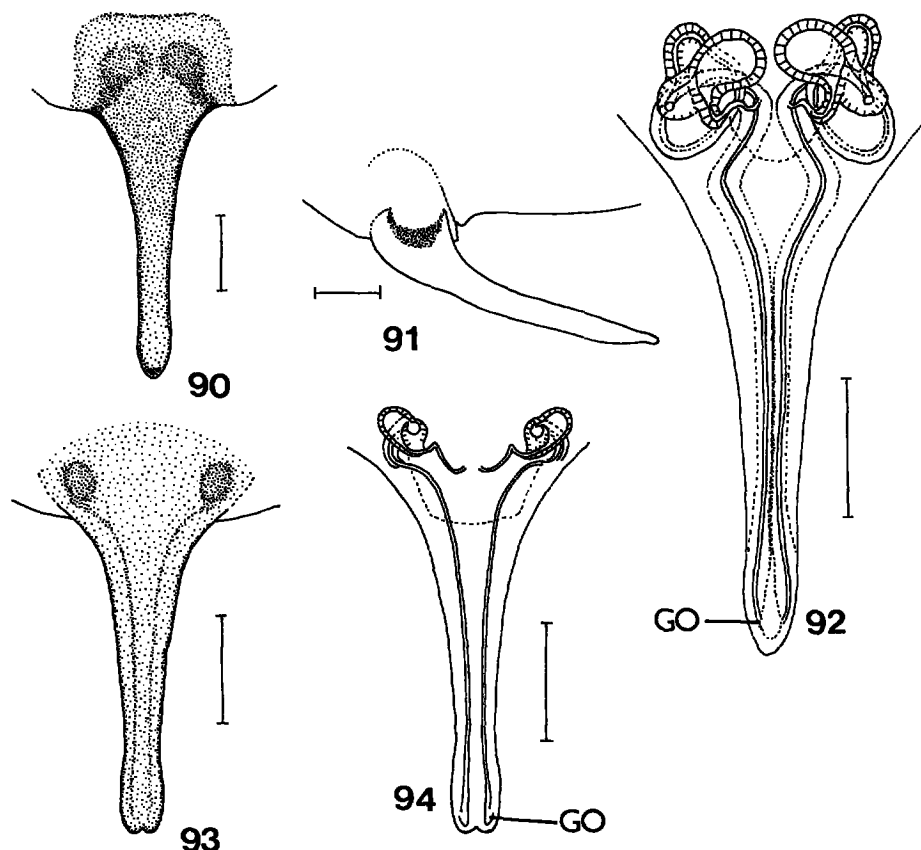
spines are 2221 in both sexes. Metatarsi I-III have trichobothrium, which is absent on metatarsus IV; TmI is 0.45-0.50. The palpal tibia has two trichobothria dorsally in both sexes. The male palpal tibia bears 2 short apophyses (Fig. 105). The tegulum of the palp projects anteriorly; the suprattegulum, which carries a prominent hook-like apophysis (Fig. 103), is only lightly sclerotized. The ED comprises a short rounded tailpiece, which carries a stout curved embolus which runs along the mesal margin of the cymbium, with the slender tip lying on a broad membranous apophysis (M, Fig. 103) which arises from the region of the stalk. The epigynum is a short, broad triangular scape, with a dimple on the ventral surface near the tip (Fig. 102); the genital openings are on the dorsal surface of the scape near the tip (Figs. 104, 106). The internal ducts follow a sinuous course (Fig. 106).

The genus appears to be endemic to eastern N. America.

Souessoula parva (Banks)
Figures 101-106; Map 9

Tmeticus parvus Banks 1899: 192.

Souessoula parva: Crosby and Bishop 1936:62; Roewer 1942:651; Bonnet 1958:4095.



Figs. 90-94.—Epigyna. 90, *Tunagyna debilis*, ventral; 91, *T. debilis*, lateral; 92, *T. debilis*, internal, dorsal; 93, *T. antricola*, ventral; 94, *T. antricola*, internal, dorsal. Abbreviation: GO, genital openings. Scale lines 0.1 mm.

Sciastes ogeechee Chamberlin and Ivie 1944:75; Ivie 1967:129.

Sciastes fuscus Chamberlin and Ivie 1944:75. Examination of the female holotype (AMNH) shows this to be *Souessoula parva*. NEW SYNONYMY.

Sisicottus atypicus Chamberlin and Ivie 1944:76; Ivie 1967:129.

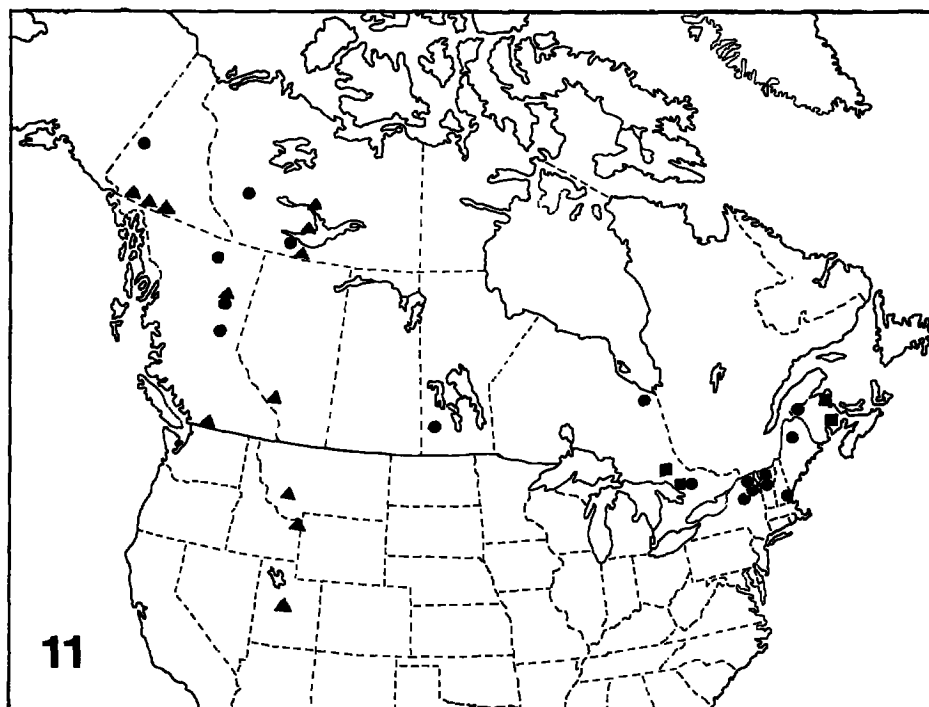
Type.—Male holotype from Shreveport, Louisiana; in MCZ, examined.

Description.—Total length: female 1.75-1.90 mm, male 1.45-1.65 mm. Carapace: length: female 0.65-0.80 mm, male 0.65-0.75 mm. Pale brown to orange-brown, with darker markings and margins. Chelicerae: the male has a prominent conical tooth anteriorly. Abdomen: grey to black. Sternum: orange, reticulated with grey. Legs: pale brown to orange-brown. TmI: female/male 0.45-0.50. Male palp: Figs. 101, 103, 105. Epigynum: Figs. 102, 104, 106.

Diagnosis.—The male is diagnosed by the form of the palpal organs (Figs. 101, 103) and of the palpal tibia (Fig. 105). The female is diagnosed by the epigynum (Fig. 102); externally this is quite similar to those of *Wabasso questio* (Fig. 119) and the *Masikia* species (Figs. 125, 126), but is paler in color; internally the duct configurations are different. The geographical range of *S. parva* is also quite distinct from those of *Wabasso* and *Masikia*.

Distribution.—Known from a few localities in the east of U. S. A. (Map 9).

Natural History.—Females have been taken adult in March to May, males in January to May, July and December. A number of adults were captured over Louisiana by aerial sampling at altitudes of 30-800 m (Crosby and Bishop 1936:63); these captures were made throughout the year, so presumably aeronauting occurs at all seasons with this species.



Map 11.—North America: distributions of *Diplocentria perplexa* (triangles), *D. rectangulata* (circles), *D. retinax* (squares).

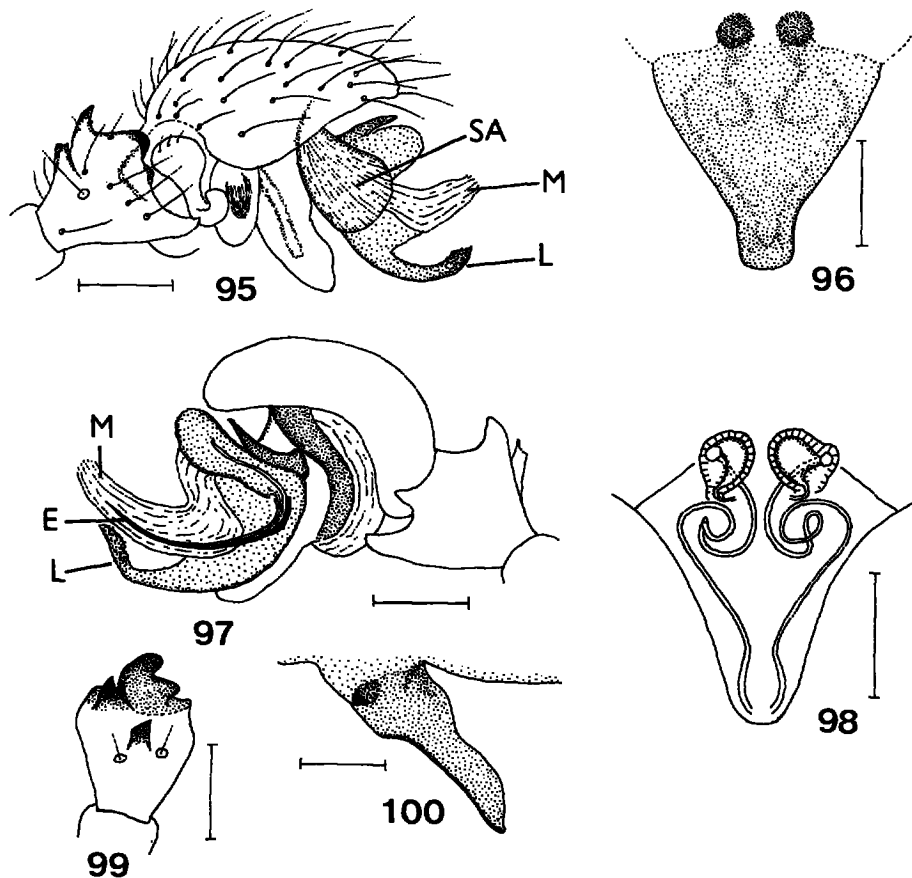
Annapolis, new genus

Type species.—*Sciastes mossi* Muma.

Etymology.—Annapolis, the state capital of Maryland, U. S. A., the state in which the type species was discovered. The name is feminine.

Definition.—The single member of this genus is a tiny spider of total length 1.0-1.1 mm. The carapace is unmodified and the abdomen has no scutum. The tracheae are of the erigonine form. The legs are short and stout, with tibia I 1/d (female) 4: the tarsi are slightly longer than the metatarsi. The tibial spines are 2211 in both sexes. Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV; TmI is 0.35-0.40. The palpal tibiae have 2 trichobothria dorsally in both sexes. The male palpal tibia has a short, blunt apophysis (Fig. 109). The suprategular apophysis of the palpal organ is broad and translucent (Fig. 107), resembling that of *Phanetta* (Fig. 95). The ED is a simple plate which carries anteriorly a short pointed embolus and a short pointed apophysis (Fig. 108). There is a small membranous apophysis which arises from the region of the stalk. The epigynum is a short scape (Fig. 110), with the genital openings near the tip on the dorsal side; the duct configuration is shown in Fig. 111.

The type species does not appear to fit into any established genus. It was placed by Muma (1945) in *Sciastes*, but the form of the epigynum and the structure of the male



Figs. 95-100.—*Phanetta subterranea*. 95, male palp, ectal; 96, epigynum, ventral; 97, male palp, mesal; 98, epigynum, internal, dorsal; 99, male palpal tibia, dorsal; 100, epigynum, lateral. Abbreviations: E, embolus; L, lamella; M, membranous apophysis; SA, suprategular apophysis. Scale lines 0.1 mm.

palp shows that this was incorrect. The epigynum and the internal duct configuration show some similarities to those of *Erigone* Audouin and Savigny.

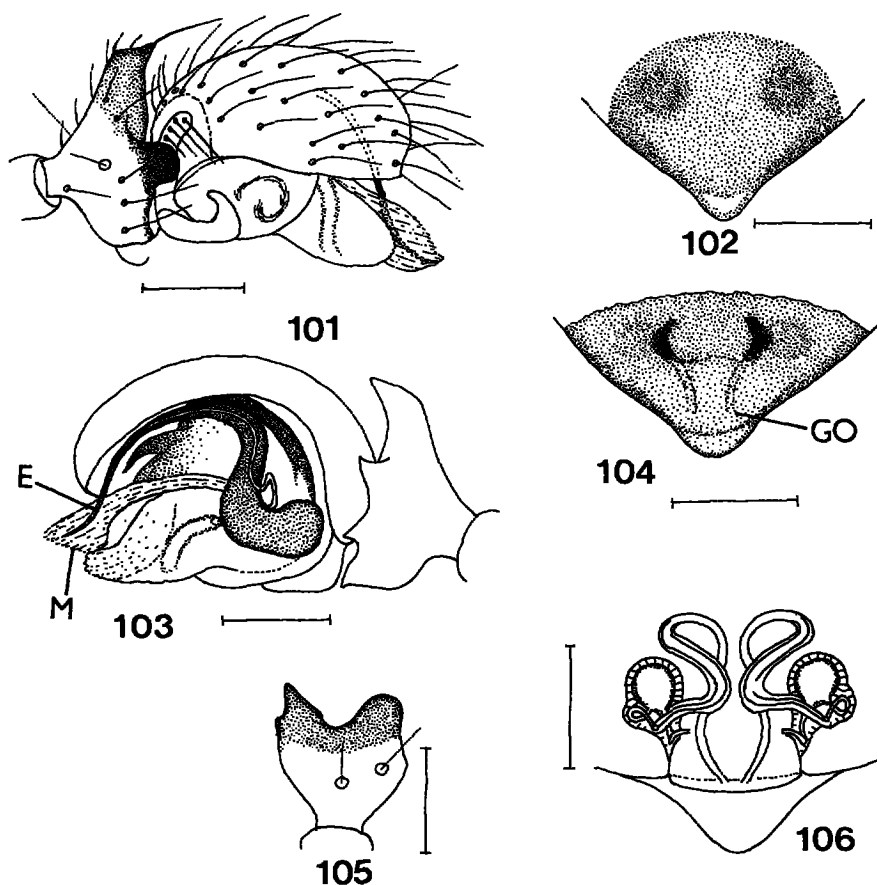
Annapolis mossi (Muma), new combination
Figures 107-111; Map 13

Sciastes mossi Muma 1945:93.

Type.—Male holotype from Branchville, Maryland, March 12, 1942; in AMNH, examined.

Description.—Total length: female 1.0-1.1 mm, male 1.0 mm. Carapace length: female/male 0.45 mm. Yellow-brown to brown, with faint dusky markings. Abdomen: grey to black. Sternum: orange, suffused with black. Legs: yellow-brown to orange-brown. TmI: female/male 0.35-0.40. Male palp: Figs. 107, 108, 109. Epigynum: Figs. 110, 111.

Diagnosis.—The male is diagnosed by the palp, and the female by the epigynum; in both sexes the small size and the tibial spines (2211) are confirmatory characters.



Figs. 101-106.—*Souessoula parva*. 101, male palp, ectal; 102, epigynum, ventral; 103, male palp, mesal; 104, epigynum, dorsal; 105, male palpal tibia, dorsal; 106, epigynum, internal, dorsal. Abbreviations: E, embolus; GO, genital openings; M, membranous apophysis. Scale lines 0.1 mm.

Distribution.—At present known only from Maryland (Map 13), but its small size may have caused it to be overlooked in some neighbouring states.

Natural History.—Both sexes were taken adult in March and October, in sphagnum moss in a swamp.

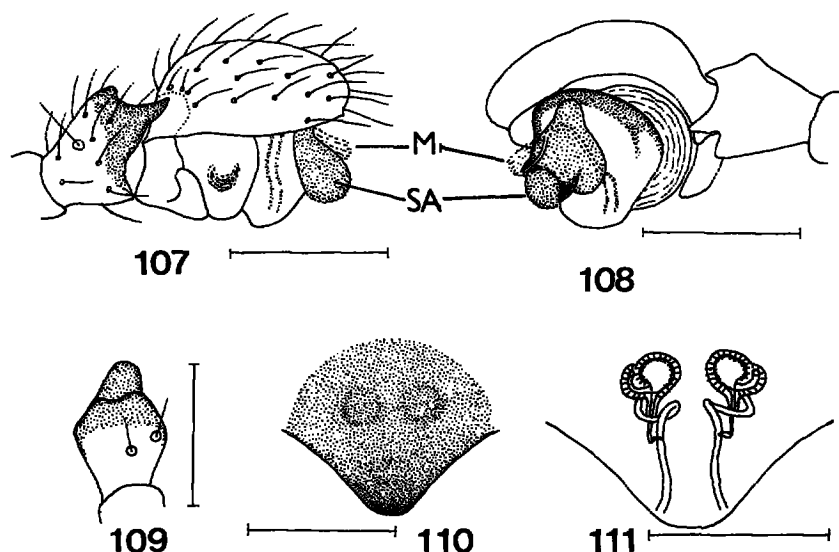
Wabasso, new genus

Type species.—*Eulaira questio* Chamberlin.

Etymology.—Wabasso, the North, in "Song of Hiawatha" by Longfellow. The name is masculine.

Definition.—The members of this genus have a total length of 1.30-1.65 mm. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively short, with tibia I 1/d (female) 4. The tibial spines are 22/21 in both sexes. The male has 2 short curved prolateral spines near the distal end of metatarsus I (Fig. 116). Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV; TmI is 0.35-0.45. The palpal tibia has 2 trichobothria dorsally in both sexes. The male palpal tibia has 2 short apophyses (Figs. 117, 118). The tegulum of the male palp has a translucent section anteriorly (Figs. 112, 114). The ED has a broad tailpiece, pointed posteriorly. Anteriorly the ED divides into 2 branches: the upper (dorsal) is the embolus, and the lower (ventral) sclerotized branch can be either short or long (Figs. 113, 115). A broad membranous lamella arises from the region of the stalk. The epigynum is a short broad scape (Figs. 119, 120), which carries a small indentation (dimple) distally on the ventral surface. The genital openings are on the dorsal side, near the tip (Figs. 122, 123), and the internal duct configuration is simple (Figs. 121, 124).

The type species was originally placed in *Eulaira*, and subsequently (under a different name) in *Diplocentria*. The epigynal form and the palpal structure differ from those of *Eulaira*; in addition, *Eulaira* has tracheae of the linyphiine form. Although the epigynum



Figs. 107-111.—*Annapolis mossi*. 107, male palp, ectal; 108, male palp, mesal; 109, male palpal tibia, dorsal; 110, epigynum, ventral; 111, epigynum, internal, dorsal. Abbreviations: M, membranous apophysis; SA, suprategular apophysis. Scale lines 0.1 mm.

is superficially like that of *Diplocentria bidentata* (Emerton), there are differences, particularly in the internal structure. The form of the male palp is also distinct from that of the *Diplocentria* species, with the ED in a single piece rather than in 2 segments. *Diplocentria* also lacks the translucent anterior section of the tegulum, and the 2 spines present on metatarsus I of the male.

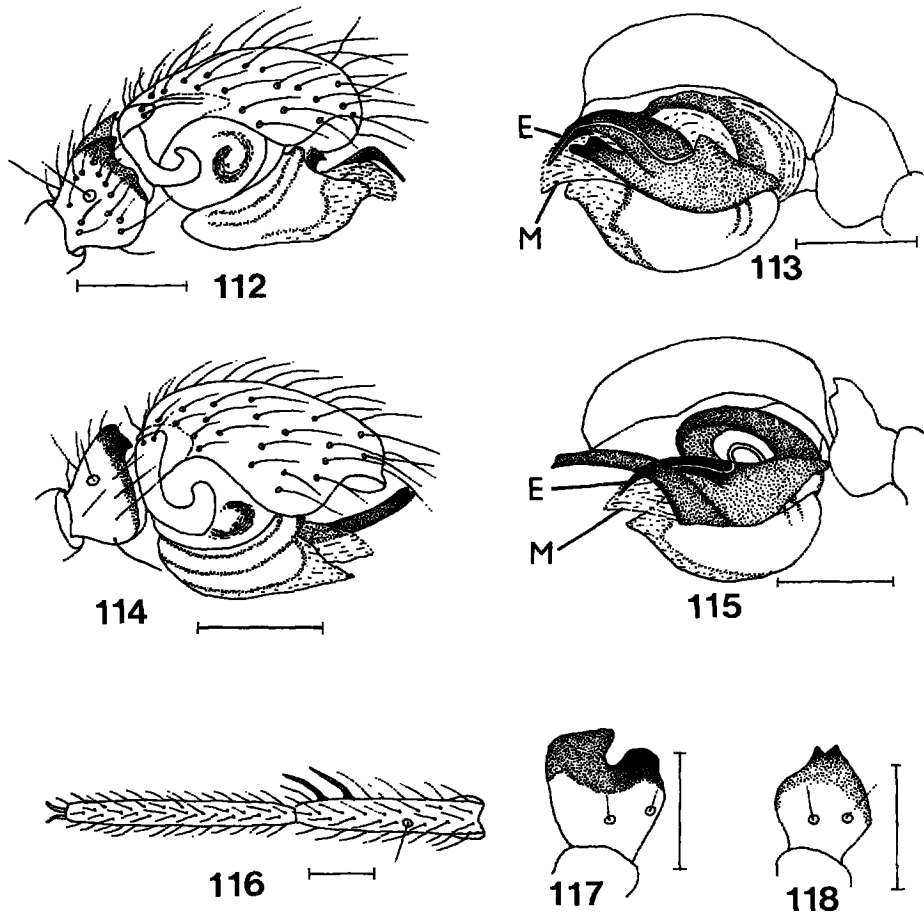
The genus, which is holarctic in distribution, contains 2 species, which can readily be separated by the genitalia.

Wabasso questio (Chamberlin), new combination

Figures 112, 113, 116, 117, 119, 121, 122; Map 6

Eulaira questio Chamberlin 1948:531 (female).

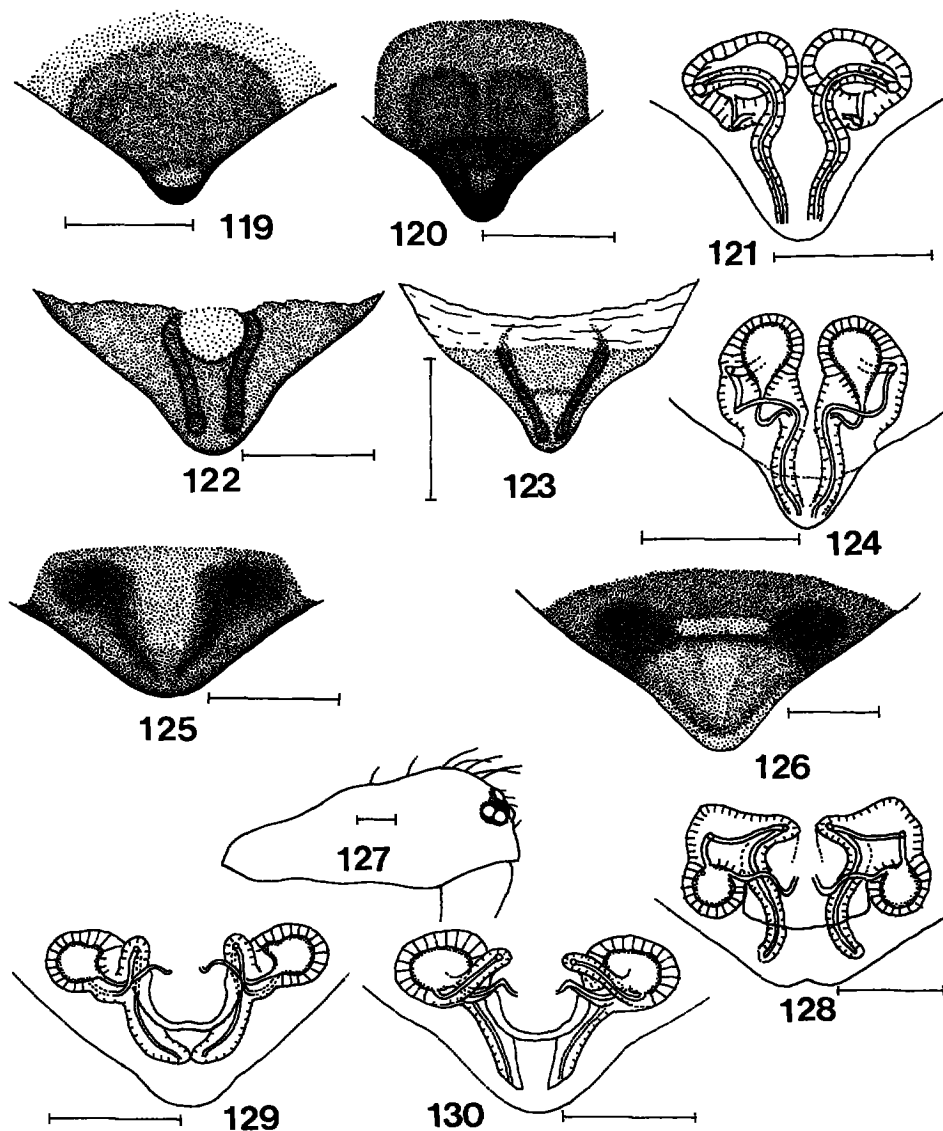
Diplocentria replicata Holm 1950:139 (male and female); 1967:27. The epigynum of this species (paratypes from Dr. Holm, Uppsala) is identical with that of the type of *Eulaira questio*. **NEW SYNONYMY.**



Figs. 112-118.—112, *Wabasso questio*, male palp, ectal; 113, *W. questio*, male palp, mesal; 114, *W. cacuminatus*, male palp, ectal; 115, *W. cacuminatus*, male palp, mesal; 116, *W. questio*, metatarsus and tarsus I; 117, *W. questio*, male palpal tibia, dorsal; 118, *W. cacuminatus*, male palpal tibia, dorsal. Abbreviations: E, embolus; M, membraneous apophysis. Scale lines 0.1 mm.

Type.—Female holotype from Churchill, Manitoba, June-July 1936 (H.E. McClure); in AMNH, examined.

Description.—Total length: female 1.45-1.65 mm, male 1.30-1.45 mm. Carapace: length: female/male 0.63-0.70 mm. Yellow-brown, with dusky markings and black margins. Abdomen: grey to black. Sternum: orange, suffused with black. Legs: brown to orange-brown with dusky markings, particularly on femora and coxae. There are 2 stout, slightly curved spines prolaterally towards the distal end of the male metatarsi (Fig. 116).



Figs. 119-130.—119, *Wabasso questio*, epigynum, ventral; 120, *W. cacuminatus*, epigynum, ventral; 121, *W. questio*, epigynum, internal, dorsal; 122, *W. questio*, epigynum, dorsal; 123, *W. cacuminatus*, epigynum, dorsal; 124, *W. cacuminatus*, epigynum, internal, dorsal; 125, *Masikia atra*, epigynum ventral; 126, *M. caliginosa*, epigynum, ventral; 127, *M. atra*, female carapace, lateral; 128, *Drepanotylus borealis*, epigynum, internal, dorsal; 129, *M. atra*, epigynum, internal, dorsal; 130, *M. caliginosa*, epigynum, internal, dorsal. Scale lines 0.1 mm.

TmI: female/male 0.40-0.45. Male palp: Figs. 112, 113, 117. The ED in European specimens (Holm 1967) shows small differences from that in the Greenland and N. American specimens. Epigynum: Figs. 119, 121, 122. In some specimens the scape is rather more pointed than shown in Fig. 119.

Diagnosis.—The male is diagnosed by the presence of the metatarsal spines (Fig. 116) and by the palpal organs and the palpal tibia (Figs. 112, 113, 117). *W. questio* is easily distinguished from *W. cacuminatus* in the male by the form of the ED and of the tibial apophyses. The female of *W. questio* is diagnosed by the epigynum, which is however generally similar in appearance to those of *Souessoula*, *Masikia* and *Diplocentria bidentata*; the internal duct configuration in *W. questio* will distinguish this species from those mentioned. The female also lacks the carapace spines present in *Masikia*, and the geographical range differs from that of *Souessoula*. *W. questio* female is distinguished from *W. cacuminatus* by the different shape of the epigynum (Fig. 119 cf. Fig. 120), and by small differences in the internal duct configurations.

Distribution.—Known only from a few localities in eastern Canada, and from West Greenland (Map 6); in Europe it is recorded from Sweden and Finland (Holm 1967).

Natural History.—Both sexes were adult in June to August, in Canada and in Greenland. The species occupies both wet and dry habitats (Holm 1967).

***Wabasso cacuminatus*, new species**

Figures 114, 115, 118, 120, 123, 124; Map 6

Type.—Male holotype from Alaska Highway, 17.5 km S. of Sikianni River, Alberta, May 31-July 8, 1981 (C. D. Dondale); deposited in CNC, Ottawa.

Description.—Both sexes were taken together. Total length: female 1.35-1.50 mm, male 1.35 mm. Carapace: length: female/male 0.60-0.65 mm. Pale brown, with faint darker markings and margins. Abdomen: grey to black. Sternum: yellow, heavily suffused with black. Legs: pale brown to brown. Male metatarsal spines as in *W. questio*. TmI: female/male 0.33-0.40. Male palp: Figs. 114, 115, 118. Epigynum: Figs. 120, 123, 124.

Diagnosis.—The male is diagnosed by the palpal organs and the palpal tibia (Figs. 114, 115, 118), and by the metatarsal spines. The female is diagnosed by the epigynum (Fig. 120). See also *W. questio* diagnosis.

Distribution.—Known from five widely separated localities, ranging from east to west of the northern part of N. America (Map 6).

Natural History.—Adult females have been taken from May to August, males from May to July and in September. Habitats recorded are in spruce/pine forest, and in "alpine garden" (Mt. Washington, New Hampshire).

***Masikia*, new genus**

Type species.—*Masikia atra*, new species.

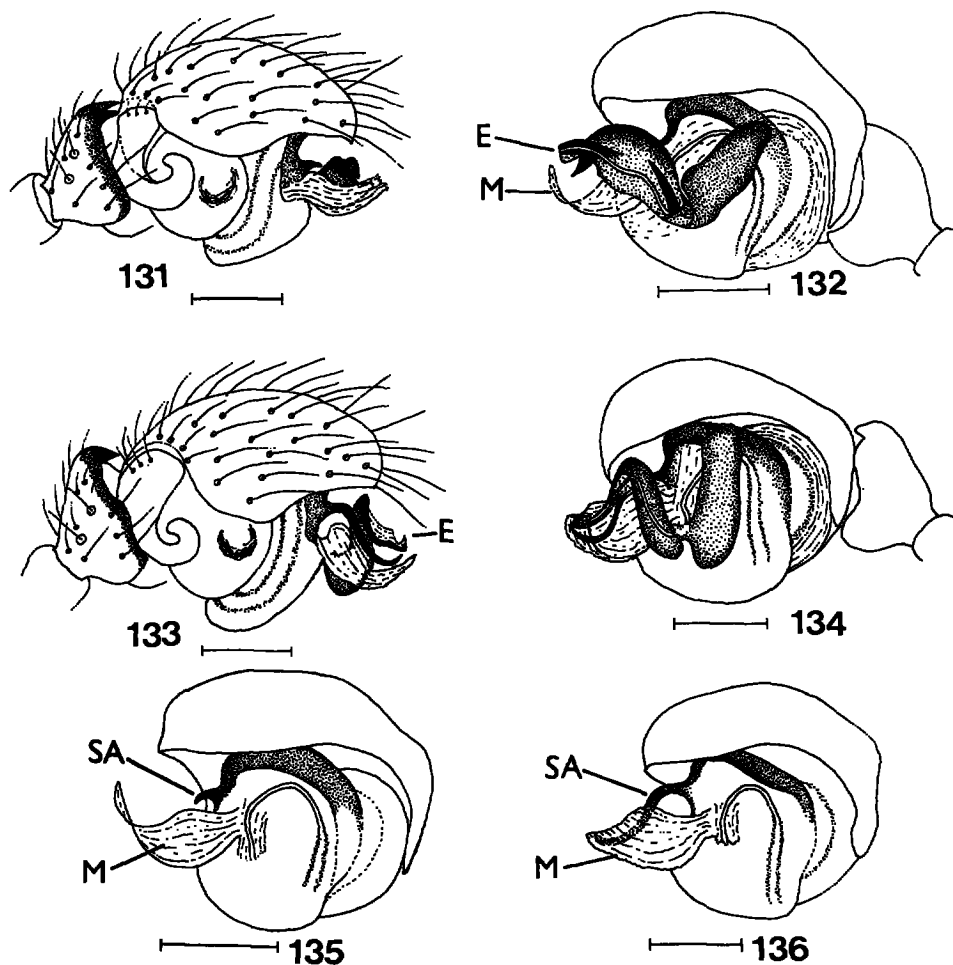
Etymology.—From the name of the locality of the type species (Masik River). The generic name is feminine.

Definition.—The members of this genus are dark colored spiders with a total length of 1.8-2.5 mm. The female carapace is raised behind the eyes, and has a longitudinal row of long spines (Fig. 127). The abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively short and stout, with tibia I 1/d (female) 4. The tibial spines

are 2221 (female). Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV; TmI is 0.50-0.56. The female palpal tibia has 2 trichobothria dorsally. The epigynum is a short scape (Figs. 125, 126), with the genital openings near the tip on the dorsal side. The internal duct configuration is simple (Figs. 129, 130). No males of the genus are known.

Masikia atra female has been mistaken for *Diplocentria bidentata*, but the form of the scape is different, as is the configuration of the internal ducts. The epigynum bears some resemblance to that of the N. European species *Drepanotylus borealis* Holm, but the internal duct structure is different (Fig. 128 cf. Figs. 129, 130). The carapace of *Masikia* (females) resembles that of some species of *Hilaira* Simon, but the epigyna in this genus are different in form.

The genus *Masikia*, which on current knowledge is endemic to N. America, comprises two species; these are separable by the epigyna.



Figs. 131-136.—Male palps. 131, *Diplocentria bidentata*, ectal; 132, *D. bidentata*, mesal; 133, *D. perplexa*, ectal; 134, *D. perplexa*, mesal; 135, *D. bidentata*, mesal, ED removed; 136, *D. perplexa*, mesal, ED removed. Abbreviations: E, embolus; M, membranous apophysis; SA, supratergular apophysis. Scale lines 0.1 mm.

***Masikia atra*, new species**
 Figures 125, 127, 129; Map 7

Type.—Female holotype from Masik River, Banks Island, Northwest Territories, July 31, 1968 (W. R. M. Mason); deposited in CNC, Ottawa.

Description.—Only the female is known. Total length: female 1.8-2.1 mm. Carapace: length: female 0.80-0.90 mm. Brown to deep brown, with blackish markings and margins; smoothly raised behind the eyes and carrying several long spines (Fig. 127). Abdomen: black. Sternum: brown, suffused with black. Legs: brown to deep orange-brown. TmI: female 0.50-0.56. Epigynum: Figs. 125, 129; there are minor variations in the length of the scape.

Diagnosis.—The female is diagnosed by the epigynum (Figs. 125, 129); this needs to be distinguished carefully from that of *M. caliginosa* (Figs. 126, 130), which shows small differences, both externally and internally. The carapace spines (Fig. 127), the dark color and the extreme northerly distribution are confirmatory characters for both *M. atra* and *M. caliginosa*. The epigynal form is generally similar in appearance to those of *Wabasso questio*, *Souessoula parva*, *Diplocentria bidentata* and *Annapolis mossi*, but the internal duct configurations are different in these species. The geographical ranges of *S. parva* and *A. mossi* are also very different from that of *Masikia*, and *A. mossi* is much smaller in size.

Distribution.—Known only from the type locality, in the far north of Canada (Map 7).

Natural History.—Females were taken in July, in a pan trap.

***Masikia caliginosa*, new species**
 Figures 126, 130; Map 7

Type.—Female holotype from Point Barrow, Alaska, June 19, 1952 (P. D. Hurd); deposited in AMNH.

Description.—Only the female is known. Total length: female 2.5 mm. Carapace: length: female 1.0 mm. Deep brown, with black markings and margins; smoothly raised behind the eyes and furnished with several long spines. Abdomen: black. Sternum: almost black. Legs: deep brown. TmI: female 0.55-0.57. Epigynum: Figs. 126, 130; the distal part of the scape is reddish brown, contrasting sharply with the black basal part.

Diagnosis.—The female is diagnosed by the epigynum (Figs. 126, 130); see *M. atra* diagnosis.

Distribution.—Known only from the type locality on the north coast of Alaska (Map 7).

Natural History.—The single female was adult in June. Nothing was recorded on habitat.

***Diplocentria* Hull**

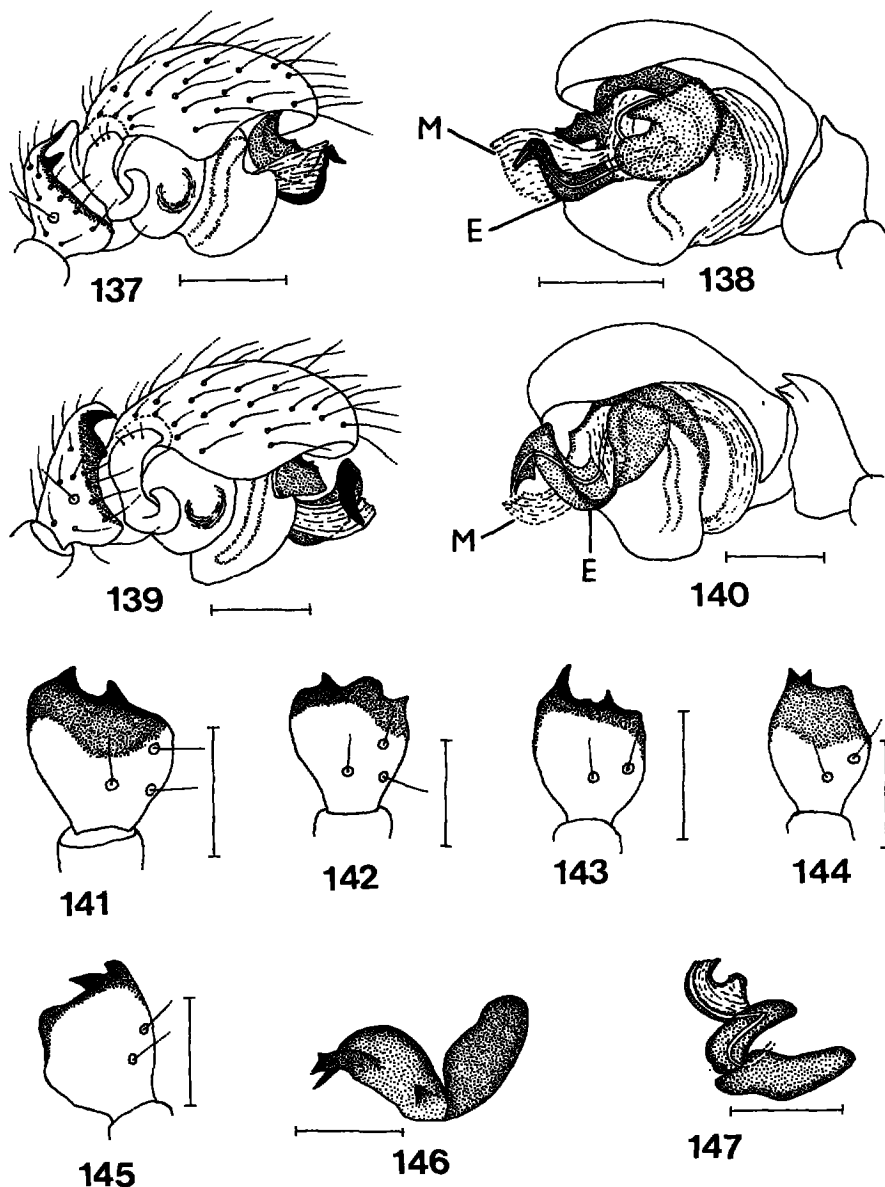
Diplocentria Hull 1911:581; Roewer 1942:575; Locket and Millidge 1953:307; Bonnet 1956:1478; Wiehle 1960: 428. Type species: *Linyphia rivalis* O.P.-Cambridge (= *Tmeticus bidentatus* Emerton) by original designation.

Microcentria Schenkel 1925:297; Roewer 1942:534; Bonnet 1957:2881; Wunderlich 1970:407. Type species: *Microcentria pusilla* Schenkel (= *Tmeticus rectangulatus* Emerton), by monotypy.

Smogigoides Crosby and Bishop 1936:52; Roewer 1942:651; Holm 1945:19; Bonnet 1958:4090. Type species: *Tmeticus rectangulatus* Emerton, by original designation.

Scotoussa Bishop and Crosby 1938:87; Roewer 1942:649; Holm 1945:19; Bonnet 1958:3976. Type species: *Tmeticus bidentatus* Emerton, by original designation.

Definition.—The members of this genus have a total length of 1.20-1.90 mm. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively short and stout, with tibia I 1/d (female) 4.5-6. The tibial spines are 2221 in both sexes. Metatarsi I-III have a trichobothrium, which is absent on metatarsus IV; TmI is 0.35-0.50. The female palpal tibia has 2 trichobothria dorsally, except in *D. perplexa* (Chamberlin and Ivie), where there are 3. The male palpal tibia has 3 trichobothria dorsally in *D. bidentata* and *D. perplexa*, and 2 in *D. rectangulata* and *D.*



Figs. 137-147.—Male palps. 137, *Diplocentria rectangulata*, ectal; 138, *D. rectangulata*, mesal; 139, *D. retinax*, ectal; 140, *D. retinax*, mesal; 141, *D. bidentata*, tibia, dorsal; 142, *D. perplexa*, tibia, dorsal; 143, *D. rectangulata*, tibia, dorsal; 144, *D. retinax*, tibia, dorsal; 145, *D. perplexa*, tibia, meso-dorsal; 146, *D. bidentata*, ED of type; 147, *D. perplexa*, ED, meso-ventral. Abbreviations: E, embolus; M, membranous apophysis. Scale lines 0.1 mm.

retinax (Crosby and Bishop); the tibia has 2 short apophyses dorsally (Figs. 141-144). The paracymbium of the male palp is well developed, with the anterior arm short and curved (e.g. Fig. 131). The distal end of the suprategulum carries a small apophysis, which is pointed and short in *D. bidentata* (Figs. 131, 135), and pointed and long in *D. perplexa* (Figs. 133, 136); in *D. rectangulata* and *D. retinax* the apophysis is smaller and less obvious (Figs. 137, 139). The ED comprises a stout tailpiece and an anterior embolic section; the two sections are quite sharply differentiated. In three of the species the embolus is in the form of a short coil (Figs. 134, 138, 140, 147); in the type species, however, the embolic section is twisted, rather than coiled, and carries two black pointed apophyses in addition to the blunt embolus (Fig. 132). A broad membranous lamella (M, Figs. 131-136, 138) arises from the stalk, and lies adjacent to the embolus. The type species has the epigynum in the form of a short scape (Figs. 148, 149, 156). *D. retinax* has a vestigial scape (Figs. 154, 158), but in *D. perplexa* and *D. rectangulata* there is no scape, although the epigyna project from the abdominal surface (Figs. 157, 159). The arrangement of the internal ducts is similar in all the species (Figs. 160, 161, 162).

The genus, which is holarctic in distribution, comprises the four species *D. bidentata*, *D. perplexa*, *D. rectangulata* and *D. retinax*.

The following species are excluded from the genus: *Tmeticus thoracicus* Emerton, placed in *Smodigoides* by Crosby and Bishop (1936), has been transferred to the new genus *Vermontia* (q.v.); *Diplocentria replicata* is a synonym of *Wabasso questio* (q.v.); and *Diplocentria corynetes* Chamberlin and Ivie is a synonym of *Oreonetides rotundus* (Emerton) (van Helsdingen 1981).

Keys to species

Males.—

1. ED of palp of characteristic form, carrying 2 black pointed apophyses (Figs. 132, 146); palpal tibia (Fig. 141). *bidentata*
 Embolus in the form of a short coil (Figs. 134, 138, 140, 147). 2
2. SA with narrow, pointed, curved apophysis distally (Figs. 133, 136); palpal tibia (Figs. 142, 145) with 3 trichobothria. *perplexa*
 SA lacking the pointed apophysis: palpal with 2 trichobothria 3
3. ED as Fig. 140, with embolus very stout; palpal tibia (Fig. 144). *retinax*
 ED as Fig. 138, with embolus less stout; palpal tibia (Fig. 143) *rectangulata*

Females.—

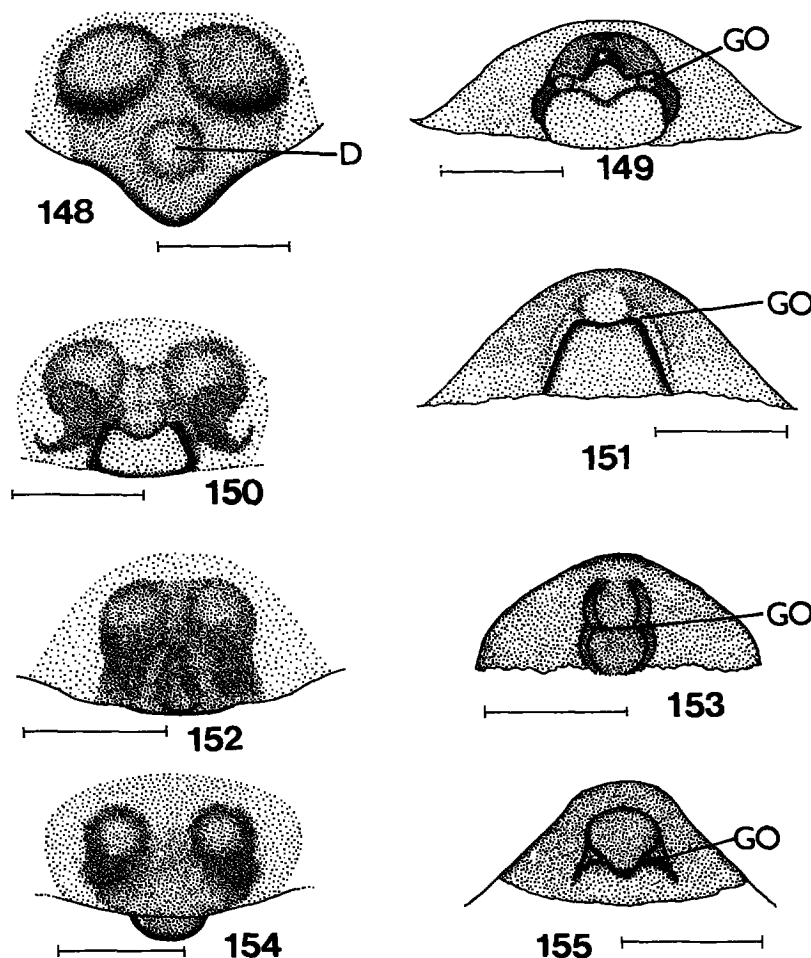
1. Epigynum with definite short scape (Figs. 148, 156), bearing a wide dimple on the ventral surface *bidentata*
 Epigynum without a definite scape 2
2. Palpal tibia with 3 trichobothria; epigynum as Figs. 150, 157. *perplexa*
 Palpal tibia with 2 trichobothria. 3
3. Epigynum as Figs. 154, 158, with rudimentary scape *retinax*
 Epigynum as Figs. 152, 159. *rectangulata*

Diplocentria bidentata (Emerton)

Figures 131, 132, 135, 141, 146, 148, 149, 156, 160; Map 10

Tmetiscus bidentatus Emerton 1882:56.*Linyphia rivalis* O.P.-Cambridge 1905:61.*Diplocentria rivalis*: Hull 1911:581; Roewer 1942:575; Bonnet 1956:1478.*Eulaira tigana* Chamberlin and Ivie 1935:6; Roewer 1942:728; Chamberlin and Ivie 1945:11; Bonnet 1956:1812.*Scotoussa bidentata*: Bishop and Crosby 1938:69; Roewer 1942:649; Bonnet 1958:3976; Kaston 1981:212.*Diplocentria bidentata*: Holm 1945:19; Chamberlin and Ivie 1945:11; Locket and Millidge 1953:307; Wiehle 1960:428.

Type.—The type material (in MCZ), from Mr. Washington, New Hampshire, June 13, is in very bad condition; the fragments contain one identifiable male palp of *bidentata*. The identifiable female remnants are not *bidentata*.



Figs. 148-155.—Epigyna. 148, *Diplocentria bidentata*, ventral; 149, *D. bidentata*, dorsal; 150, *D. perplexa*, ventral; 151, *D. perplexa*, caudal; 152, *D. rectangulata*, ventral; 153, *D. rectangulata*, caudal; 154, *D. retinax*, ventral; 155, *D. retinax*, caudal. Abbreviations: D, dimple; GO, genital opening. Scale lines 0.1 mm.

Description.—Total length: female/male 1.65-1.75 mm. Carapace: length: female/male 0.70-0.80 mm. Yellow to orange-brown, with faint darker markings and margins. Abdomen: grey. Sternum yellow to orange, suffused with some grey. Legs: brown to yellow-brown. TmI: female/male 0.45-0.50. Male palp: Figs. 131, 132, 135, 141; the palp in the type material, and some specimens from Manitoba, have a shortened tooth on the ED (Fig. 146). Epigynum: Figs. 148, 149, 156, 160.

Diagnosis.—The male is diagnosed by the palpal organ and the tibial apophyses (Figs. 131, 132, 141). The ED is distinctive in form, but it must be remembered that in some specimens the basal pointed apophysis is short (Fig. 146). The female is diagnosed by the epigynum (Figs. 148, 149, 156); this has a shallow dimple on the short scape.

Distribution.—This species is holarctic in distribution. It is widespread throughout the whole of the northern half of N. America, and also extends southwards into the mountains of Wyoming, Utah and Colorado (Map 10).

Natural History.—Females have been taken adult from April to November, males from April to December. Habitats recorded are in grass, in meadows, in weeds, in moss, in litter, in spruce/fir and mixed forests, and in boggy and marshy areas.

Diplocentria perplexa (Chamberlin and Ivie)

Figures 133, 134, 136, 142, 145, 147, 150, 151, 157, 161; Map 11

Maso perplexa Chamberlin and Ivie 1939:48; Roewer 1942:620.

Maso perplexus: Bonnet 1957:2734.

Diplocentria perplexa: Chamberlin and Ivie 1945:11.

Type.—Male holotype from Provo River at Cobble Rest Camp, Utah, July 30, 1936 (W. Ivie); in AMNH, examined.

Description.—Both sexes have been taken together; the female is described for the first time. Total length: female 1.70-1.90 mm, male 1.50-1.90 mm. Carapace: length: female 0.73-0.85 mm, male 0.78-0.85 mm. Yellow to orange-brown, with faint darker markings. Abdomen: whitish grey to grey. Sternum: yellow, faintly suffused with grey. Legs: pale yellow to orange-brown. TmI: female/male 0.40-0.47. Male palp: Figs. 133, 134, 136, 142, 145, 147. Epigynum: Figs. 150, 151, 157, 161.

Diagnosis.—The male is diagnosed by the palpal organs and the tibial apophyses (Figs. 133, 134, 142, 145). The female is diagnosed by the epigynum (Figs. 150, 151, 157), coupled with the presence on the palpal tibia of 3 trichobothria.

Distribution.—This species appears to be endemic to western N. America, with records from Utah northwards to Yukon Territory and Mackenzie (Northwest Territories) (Map 11).

Natural History.—Females have been taken adult from May to October, males from June to October. Habitats recorded are alpine meadow, a sand dune, and a spruce/pine forest.

Diplocentria rectangulata (Emerton), new combination

Figures 137, 138, 143, 152, 153, 159, 162; Map 11

Tmeticus rectangulatus Emerton 1915:137.

Microcentria pusilla Schenkel 1925:297; Roewer 1942:534; Bonnet 1957:2881.

Microcentria rectangulata: Holm 1945:19.

Smogoides rectangulatus: Crosby and Bishop 1936:52; Bonnet 1958:4090.

Eperigone rectangularata: Roewer 1942:718.

Aigola rectangularata: Roewer 1942:514 (an error: not *Microneta rectangularata* Emerton 1913:217).

Type.—Male holotype from Mt. Mansfield, Vermont, July 10, 1911 (Emerton); in MCZ, examined.

Description.—Total length: female/male 1.20-1.45 mm. Carapace: length: female/male 0.60-0.65 mm. Yellow to pale brown with faint grey markings and margins. Abdomen: grey to black. Sternum: yellow, suffused with some black. Legs: pale brown to orange-brown. TmI: female 0.40-0.44, male 0.35-0.40. Male palp: Figs. 137, 138, 143. Epigynum: Figs. 152, 153, 159, 162.

Diagnosis.—This species is the smallest of the genus. The male is diagnosed by the palpal organs and the tibial apophyses (Figs. 137, 138, 143). The ED is fairly similar to that of *D. retinax* (Figs. 139, 140), but in the latter species the embolus is stouter and the tailpiece is different in shape. The female is diagnosed by the epigynum (Figs. 152, 153); this might be confused with that of *D. retinax* (Figs. 154, 155), but in the latter species there is a distinct small projection (vestigial scape) posteriorly, which is absent in *D. rectangularata* (Fig. 158 cf. Fig. 159).

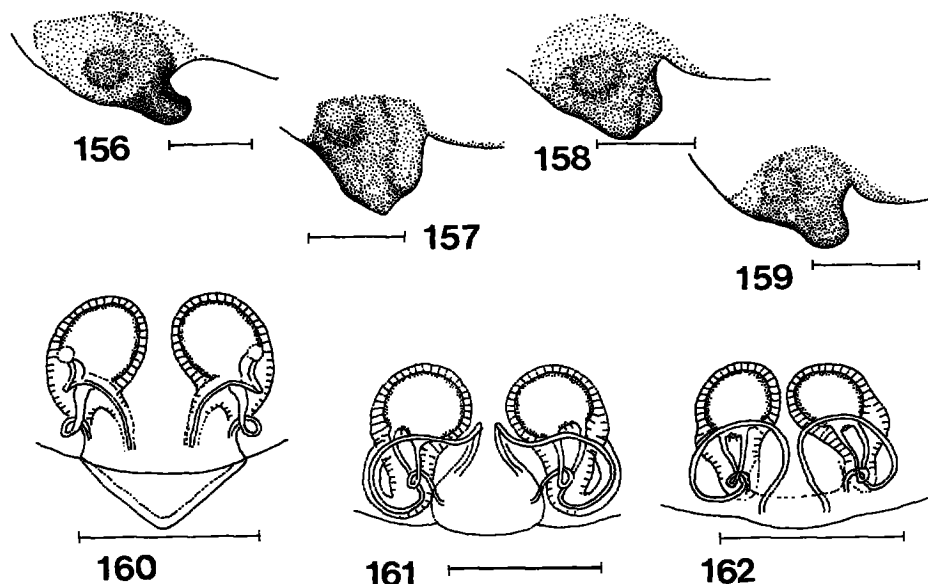
Distribution.—This species is holarctic in distribution; it is widespread throughout the northern half of N. America (Map 11).

Natural History.—Both sexes have been taken adult from May to October. Habitats recorded are in moss, in litter, in a soil sample, and in a spruce/fir forest.

Diplocentria retinax (Crosby and Bishop), new combination

Figures 139, 140, 144, 154, 155, 158; Map 11

Smodigoides retinax Crosby and Bishop 1936:53; Roewer 1942:651; Bonnet 1958:4090.



Figs. 156-162.—Epigyna. 156, *Diplocentria bidentata*, lateral; 157, *D. perplexa*, lateral; 158, *D. retinax*, lateral; 159, *D. rectangularata*, lateral; 160, *D. bidentata*, internal, dorsal; 161, *D. perplexa*, internal, dorsal; 162, *D. rectangularata*, internal, dorsal. Scale lines 0.1 mm.

Type.—No complete specimen of this species has been found. One vial labelled with the type data (Mt. Mansfield, Vermont, June 19, 1927), but not labelled as "type", is present in AMNH; this vial contains a single palp, the structure of which is in agreement with the rather poor figure given by Crosby and Bishop (1936). Since the species was described on a single male, this palp presumably came from the type.

Description.—Both sexes have been taken together; the female is described for the first time. Total length: female 1.45-1.75 mm, male 1.45-1.65 mm. Carapace: length: female 0.65-0.75 mm, male 0.65-0.70 mm. Yellow-brown to orange-brown, with faint dusky markings. Abdomen: grey to black. Sternum: orange-yellow, suffused with black. Legs: yellow to orange-brown. TmI: female 0.40-0.45, male 0.38-0.41. Male palp: Figs. 139, 140, 144. Epigynum: Figs. 154, 155, 158.

Diagnosis.—The male is diagnosed by the palpal organs and the tibial apophyses (Figs. 139, 140, 144). The female is diagnosed by the epigynum (Figs. 154, 155, 158). In both sexes confusion is possible with *D. rectangulata*: see diagnosis of that species.

Distribution.—This species appears to be restricted to a relatively small region in eastern N. America (Map 11). In a few localities it is sympatric with *D. rectangulata*.

Natural History.—Females have been taken adult from May to August, males from May to July. Habitats recorded are in moss in mixed woods, in red pine litter, in a soil sample, and at the edge of a bog.

Sciastes Bishop and Crosby

Sciastes Bishop and Crosby 1938:81; Roewer 1942:647; Bonnet 1958:3950; Thaler 1971:315. Type species: *Tmeticus truncatus* Emerton by original designation.

Definition.—This genus comprises spiders with a total length of 1.8-2.9 mm. The carapace is armed with several long bristles along the median line in both sexes; in the male, there are also numerous short hairs on the clypeus. The abdomen is without scuta. The tracheae are of the erigonine form. The legs are of moderate length, with tibia I 1/d (female) 4.5-6. The tibial spines 2222 in both sexes; tibia I has in addition a prolateral spine on the distal half (absent in the European species *S. carli* [Lessert]). Metatarsi I-III have a trichobothrium; metatarsus IV lacks a trichobothrium in the type species and in the other N. American species, but carries a trichobothrium in the Greenland species *S. extremus* Holm and in the European *S. carli*. TmI is ca 0.50. The palpal tibia has 3 trichobothria dorsally in both sexes. The male palpal tibia has apophyses which may be short or long. The paracymbium of the male palp is large, with the anterior arm triangular in shape (e.g. Fig. 163). The distal end of the suprategulum has no apophysis. The ED is simple (Figs. 164, 166, 170), with a short rounded tailpiece, a short pointed embolus anteriorly, and a small projection on the dorsal margin. The embolus lies adjacent to a small membranous lamella which arises from the stalk (M, Fig. 164). In *S. hastatus*, new species, the ED, though of the same general form, is slightly more complex, with the tailpiece larger and only weakly sclerotized, and with the embolus hook-shaped (Fig. 167). The ventral plate of the epigynum carries two more or less longitudinal dark bands, which mark the positions of the internal apodemes, but also form 2 shallow grooves which lead to the genital openings (Figs. 175, 176, 177). The internal duct configuration is relatively simple (Fig. 178).

The genus, which is holarctic in distribution, comprises four species in N. America and Greenland: *S. truncatus*, *S. ensifer* new species, *S. hastatus* and *S. extremus*; there is a single additional species (*S. carli*) in Europe (Thaler 1971).

Apart from the type, all the species that were placed in *Sciastes* by Crosby and Bishop (1936), Bishop and Crosby (1938), Chamberlin and Ivie (1944, 1947), Muma (1945) and Chamberlin (1948) are no longer included in the genus. The species excluded are:

S. sacuminatus (Emerton) (Bishop and Crosby 1938): the palpal structure of this species shows that it is not a *Sciastes*.

S. beluga Chamberlin and Ivie (1947) is *Eboria lapponica* Holm (Holm 1960:123; 1963:270).

S. concavus (Emerton) (Bishop and Crosby 1938) is *Aphileta misera* (O.P.-Cambridge) (Holm 1968:189).

S. fuscus Chamberlin and Ivie (1944) is *Souessoula parva* (q.v.).

S. gargopa (Crosby and Bishop: 1936) has been transferred to *Tachygyna* (q.v.).

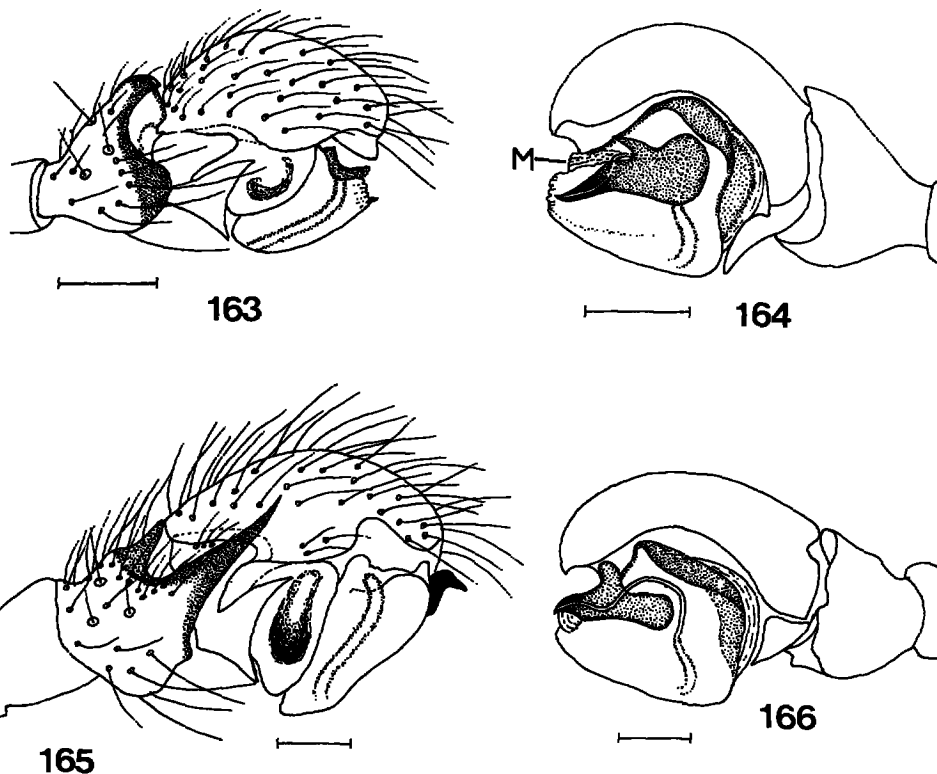
S. microtarsus (Emerton) (Bishop and Crosby 1938) was transferred to *Eulaira* by Chamberlin and Ivie (1945), and then to *Aphileta* by Ivie (1967). The tracheal form is certainly linyphiine, as in *Aphileta*, but the palpal and epigynal structures make it unlikely that *microtarsus* is correctly placed in that genus.

S. mossi Muma (1945) has been transferred to the new genus *Annapolis* (q.v.).

S. ogeechee Chamberlin and Ivie (1944) is *Souessoula parva* (Ivie 1967).

S. simplex (Chamberlin) (Bishop and Crosby 1938) was transferred to *Eulaira* (Chamberlin and Ivie 1945).

S. tenna Chamberlin (1948): the epigynum, which has a short scape, shows that this species is not a *Sciastes*. The internal duct configuration is complex, and this species is possibly linyphiine.



Figs. 163-166.—Male palps. 163, *Sciastes truncatus*, ectal; 164, *S. truncatus*, mesal; 165, *S. ensifer*, ectal; 166, *S. ensifer*, mesal. Abbreviations: M, membrane apophysis. Scale lines 0.1 mm.

S. terrestris (Emerton) (Bishop and Crosby 1938) was transferred to *Porrhomma* (Ivie 1967).

S. ursinus Bishop and Crosby (1938) has been transferred to *Tachygyna* (q.v.).

S. vicosanus Bishop and Crosby (1938): the palp and epigynum of this Brazilian species show that it is not a *Sciastes*.

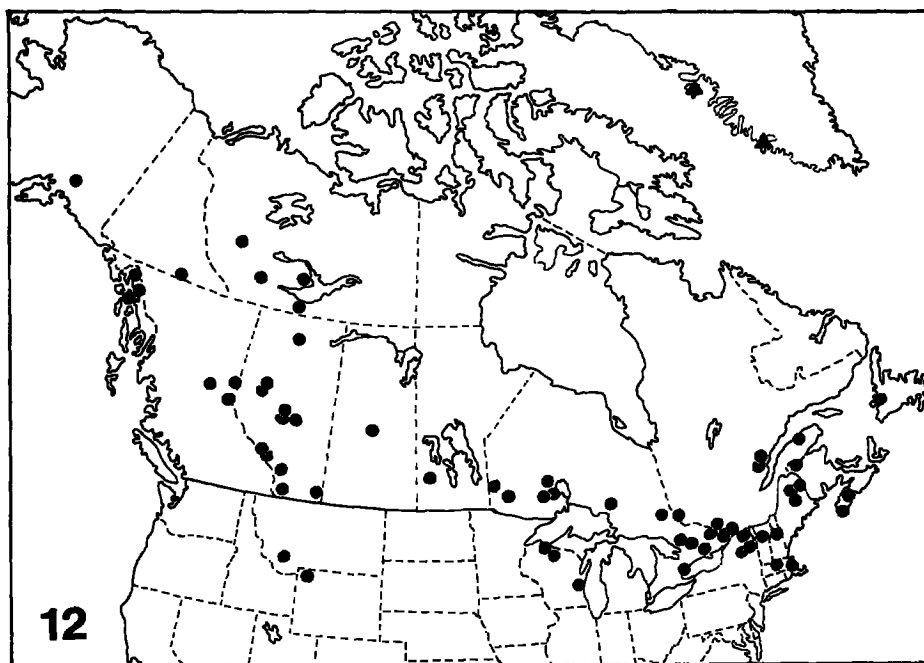
Keys to North American species

Males.—

1. Tibial apophysis short (Figs. 163, 171) *truncatus*
 Tibial apophysis long and pointed (Figs. 172-174) 2
2. Trichobothrium present on metatarsus IV; tibial apophysis Figs. 169, 174 *extremus*
 Trichobothrium absent on metatarsus IV 3
3. Tibial apophysis Figs. 165, 172; ED Fig. 166 *ensifer*
 Tibial apophysis Figs. 168, 173; ED Fig. 167 *hastatus*

Females (the female of *hastatus* is unknown).—

1. Trichobothrium present on metatarsus IV; epigynum Fig. 177 *extremus*
 Trichobothrium absent on metatarsus IV 2
2. Epigynum Fig. 175; common, widely distributed species *truncatus*
 Epigynum Fig. 176; uncommon species with restricted distribution *ensifer*



Map 12.—North America: distributions of *Sciastes truncatus* (circles), *S. extremus* (triangles).

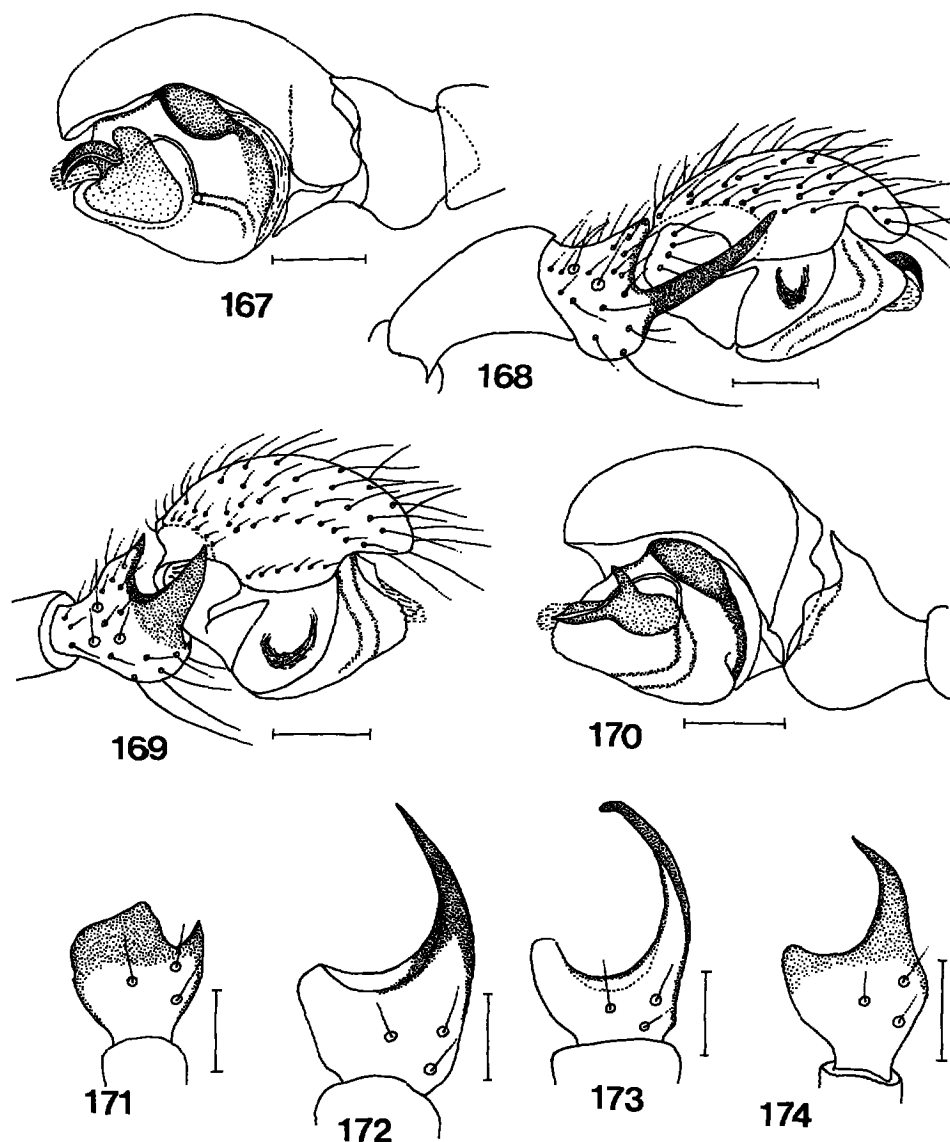
Sciastes truncatus (Emerton)
 Figures 163, 164, 171, 175, 178; Map 12

Tmetiscus truncatus Emerton 1882:57.

Sciastes truncatus: Bishop and Crosby 1938:81; Roewer 1942:648; Bonnet 1958:3952.

Type.—Male holotype from Mt. Washington, New Hampshire, June 13, 1873 (Emerton); in MCZ, examined.

Description.—Total length: female 1.95-2.45 mm, male 1.8-2.2 mm. Carapace: length: female 1.0-1.1 mm, male 0.9-1.0 mm. Orange to orange-brown, with faint darker margins.



Figs. 167-174.—Male palps. 167, *Sciastes hastatus*, mesal; 168, *S. hastatus*, ectal; 169, *S. extremus*, ectal; 170, *S. extremus*, mesal; 171, *S. truncatus*, tibia, dorsal; 172, *S. ensifer*, tibia, dorsal; 173, *S. hastatus*, tibia, dorsal; 174, *S. extremus*, tibia, dorsal. Scale lines 0.1 mm.

Abdomen: grey to black. Sternum: orange, reticulated and margined with grey. Legs: yellow to orange; TmI: female/male 0.40-0.45. Male palp: Figs. 163, 164, 171. Epigynum: Figs. 175, 178.

Diagnosis.—The male is diagnosed by the palpal organs and the palpal tibia (Figs. 163, 171). The ED (Fig. 164) is generally similar to, but distinct from, those of *S. extremus* and *S. ensifer*. The female is diagnosed by the epigynum; the genital openings (Fig. 175) are larger and more distinct than in *S. ensifer* (Fig. 176) and *S. extremus* (Fig. 177).

Distribution.—This common species is widely distributed throughout the northern half of the N. American continent (Map 12).

Natural History.—Females have been taken adult in April to October, males in April to December. Numerous habitats have been recorded: in moss, grass, and weeds; in meadows; in litter; in forests; in marshy and boggy areas; in a rotting tree; and on fences (presumably preparing to aeronaut). The species appears to favour wet situations.

Sciastes ensifer, new species

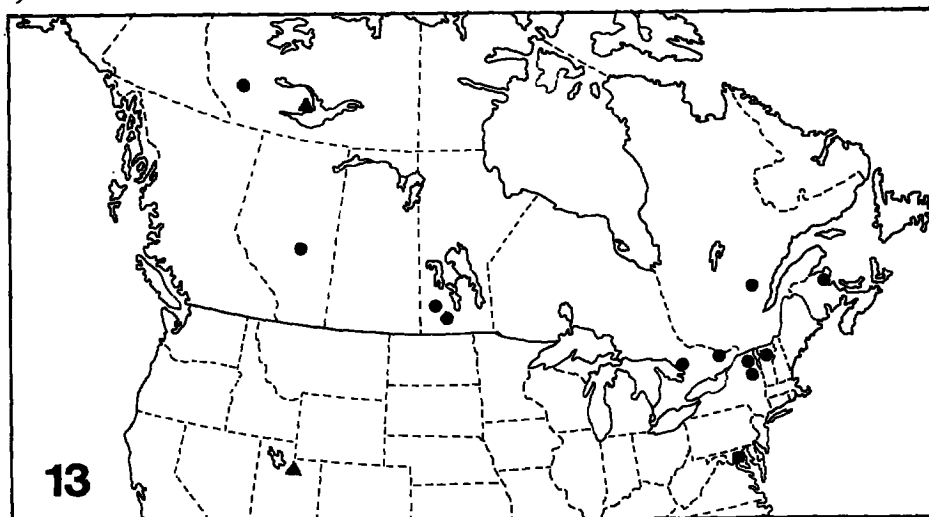
Figures 165, 166, 172, 176; Map 13

Type.—Male holotype from Stagg River Camp, 12 mi. SE of Rae, Mackenzie (Northwest Territories), August 14, 1965 (M. and W. Ivie); deposited in AMNH.

Description.—Both sexes were taken together. Total length: female 2.9mm, male 2.45 mm. Carapace: length: female 1.3-1.4 mm, male 1.2 mm. Orange, with faint darker markings. Abdomen: grey to black. Sternum: orange, reticulated and margined with grey. Legs: yellow to orange-brown. TmI: female 0.45-0.50, male 0.50. Male palp: Figs. 165, 166, 172. Epigynum: Fig. 176.

Diagnosis.—The male is diagnosed by the palpal organs and palpal tibia (Figs. 165, 166, 172). The female is diagnosed by the epigynum (Fig. 176), which differs significantly from those of *S. truncatus* (Fig. 175) and *S. extremus* (Fig. 177).

Distribution.—Known only from Utah and Mackenzie (Northwest Territories) (Map 13).



Map 13.—North America: distribution of *Vermontia thoracica* (circles), *Sciastes ensifer* (triangles), *Annapolis mossi* (square).

Natural History.—Both sexes were adult in August. Nothing was recorded on habitat.

Sciastes hastatus, new species

Figures 167, 168, 173; Map 6

Type.—Male holotype from Mirror Lake, Uintah Mountains, Utah, August 18, 1942 (W. Ivie); deposited in AMNH.

Description.—Only the male is known. Total length: male 2.05-2.2 mm. Carapace: length: male 1.1 mm. Orange, with faint dusky markings. Abdomen: grey. Sternum: orange, reticulated with black. Legs: orange. TmI: male 0.47-0.51. Male palp: Figs. 167, 168, 173; there are minor differences between the Utah and Mackenzie males.

Diagnosis.—The male is diagnosed by the palpal organs and the palpal tibia (Figs. 167, 168, 173), which readily distinguish it from the other *Sciastes* species.

Distribution.—Known only from Utah and Mackenzie (Northwest Territories) (Map 6).

Natural History.—The male was adult in August; nothing was recorded on habitat.

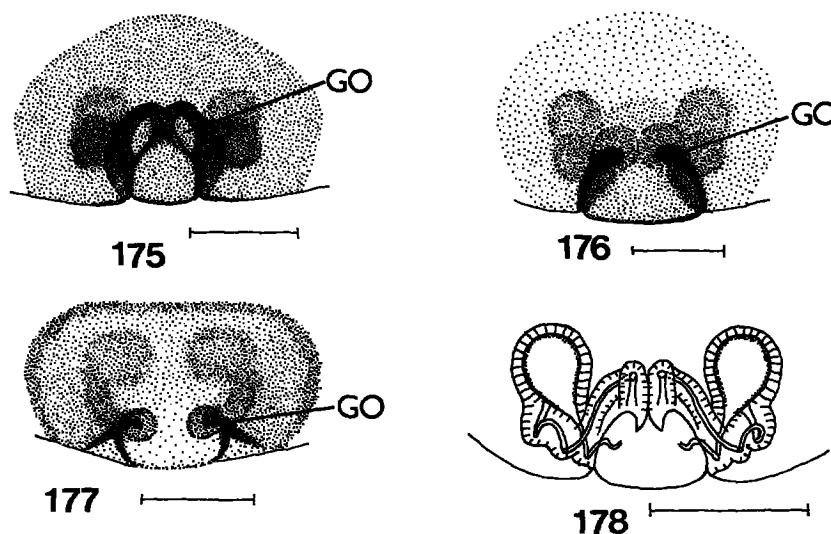
Sciastes extremus Holm

Figures 169, 170, 174, 177; Map 12

Sciastes extremus Holm 1967:54.

Type.—Male holotype from Lyngmarksfiel, Disko, West Greenland, July 21, 1962 (Å. Holm); deposited in the Copenhagen Museum. Paratypes, supplied by Å. Holm, examined.

Description.—Total length: female 2.15-2.35 mm, male 1.8-2.0 mm. Carapace: length: female 1.0-1.1 mm, male 0.9 mm. Yellow-brown to orange-brown, with dusky markings and margins. Abdomen: grey to black. Sternum: yellow to orange-yellow, suffused with grey. Legs: yellow to orange-brown TmI: female/male 0.50-0.53. Metatarsus IV with a trichobothrium. Male palp: Figs. 169, 170, 174. Epigynum: Fig. 177.



Figs. 175-178.—Epigyna, 175, *Sciastes truncatus*, ventral; 176, *S. ensifer*, ventral; 177, *S. extremus*, ventral; 178, *S. truncatus*, internal, dorsal. Abbreviations: GO, genital opening. Scale lines 0.1 mm.

Diagnosis.—The male is diagnosed by the presence of a trichobothrium on metatarsus IV, and by the palpal organs and palpal tibia (Figs. 169, 170, 174). The female is diagnosed by the epigynum (Fig. 177), and by the presence of the trichobothrium on metatarsus IV.

Distribution.—Known only from the west coast of Greenland (Map 12). This species may later on be taken in north-east Canada.

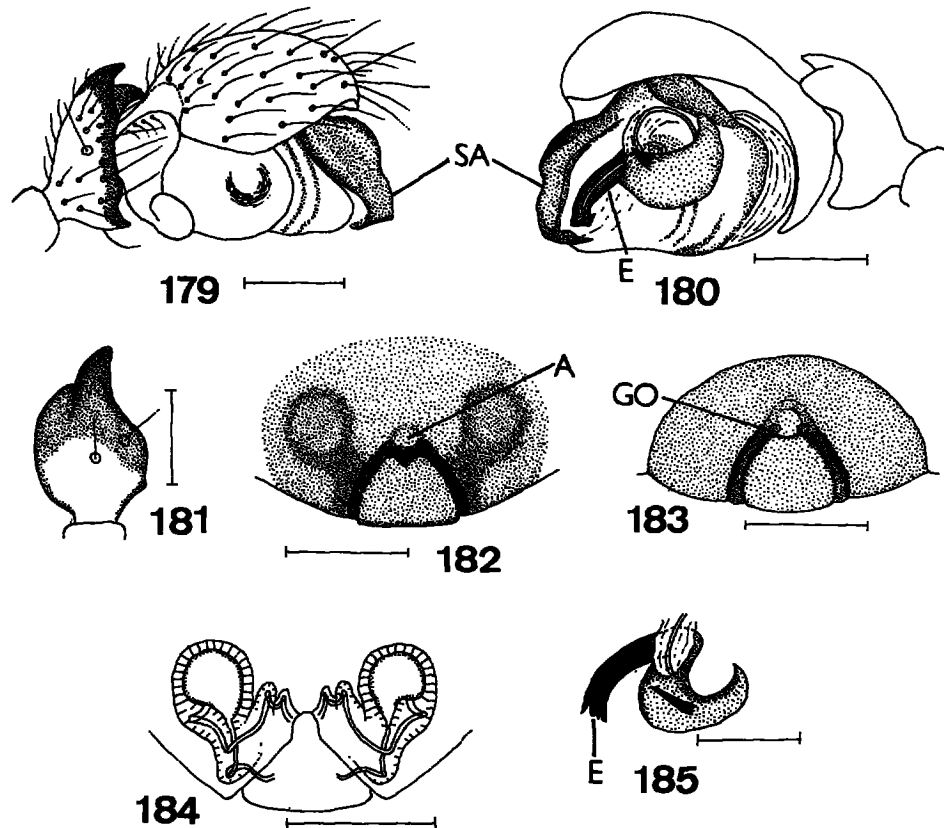
Natural History.—Both sexes were adult in July. The species preferred moist habitats amongst low vegetation, and no specimens were found under stones (Holm 1967).

Vermontia, new genus

Type species.—*Tmeticus thoracicus* Emerton.

Etymology.—Derived from the name of the state (Vermont, U. S. A.) in which the type species was discovered. The genus name is feminine.

Definition.—The single member of the genus has a total length of 1.35-1.65 mm. The carapace is unmodified, and the abdomen is without scuta. The tracheae are of the erigonine form. The legs are relatively short, with tibia I 1/d (female) 5-6. The tibial spines are 2221 in both sexes. Metatarsi I-III have a trichobothrium, which is absent on



Figs. 179-185.—*Vermontia thoracica*. 179, male palp, ectal; 180, male palp mesal; 181, male palpal tibia dorsal; 182, epigynum, ventral; 183, epigynum, dorsal; 184, epigynum, internal, dorsal; 185, ED, dorsomesal. Abbreviations: A, circular area; E, embolus; GO, genital openings; SA, suprategular apophysis. Scale lines 0.1 mm.

metatarsus IV; TmI is 0.45-0.50. The palpal tibia has 2 trichobothria dorsally in both sexes. The male palpal tibia is produced anteriorly into 2 short blunt apophyses (Figs. 179, 181). The tegulum of the male palp projects somewhat anteriorly. The ED (Figs. 180, 185) comprises a crescent-shaped tailpiece which bears a black pointed tooth, and a broad, curved, ribbon-like embolus which arises on the ectal side of the tailpiece (Figs. 180, 185); the two parts of the ED are sharply differentiated. The suprategular apophysis is broad and sclerotized, and extends around the anterior margin of the tegulum (Fig. 180). There appears to be no membranous apophysis arising from the stalk. The epigynum (Figs. 182, 183) and the internal duct configuration (Fig. 184) show distinct resemblances to those of the *Sciastes* species.

The type species was placed by Crosby and Bishop (1936) in *Smodigoides* (synonym of *Diplocentria*). The form of the male palp and the form of the epigynum show that the species is not congeneric with *Diplocentria bidentata*, and the palpal form also shows that it is not congeneric with *Sciastes truncatus*. Consequently a new genus appears to be necessary. The genus appears to be endemic to N. America.

Vermontia thoracica (Emerton), new combination
Figures 179-185; Map 13

Tmeticus thoracicus Emerton 1913:216.

Gongylidium unidentatum Emerton 1917:264.

Smodigoides thoracicus: Crosby and Bishop 1936:54; Roewer 1942:651; Bonnet 1958:4090.

Type.—Male holotype from Mt. Mansfield, Vermont, July 10, 1901; in MCZ, examined. This type is in bad condition, completely fragmented; the only identifiable part is one incomplete palp.

Description.—Total length: female 1.35-1.65 mm, male 1.50-1.55 mm. Carapace: length: female 0.66-0.70 mm, male 0.70-0.78 mm. Orange-brown to deep brown, with dusky markings and margins. Abdomen: grey to black. Sternum: yellow to orange, suffused with black. Legs: yellow to orange-brown. TmI: female/male 0.45-0.50. Male palp: Figs. 179, 180, 181, 185. Epigynum: Figs. 182, 183, 184.

Diagnosis.—The male is diagnosed by the palpal organs and the tibial apophyses (Figs. 179, 180, 181). The ED bears some resemblance to those of the *Diplocentria* species, but the strongly developed SA is quite different. The female is diagnosed by the epigynum (Figs. 182, 183); the small, more or less circular area (A, Fig. 182) seems always to be present.

Distribution.—This species is widely distributed in the northern half of N. America, though the number of localities recorded is comparatively few (Map 13).

Natural History.—Females have been taken adult in May to August and in October, males in June to October. Habitats recorded are in moss and litter in a seepage area; in a soil sample in a marshy area; in moss in a boggy area; in forest litter; and in a meadow. It seems probable that the species prefers wet areas.

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